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(54) Title: NUCLEIC ACIDS, PROTEINS, AND ANTIBODIES

(57) Abstract: The present invention relates to novel immune/hematopoietic-related polynucleotides and the polypeptides encoded by these polynucleotides herein collectively known as "immune/hematopoietic antigens", and the use of such immune/hematopoietic antigens for detecting immune/hematopoietic-related diseases and/or disorders, particularly the presence of cancer and cancer metastases of cells of hematopoietic origin. More specifically, isolated immune/hematopoietic associated nucleic acid molecules are provided encoding novel immune/hematopoietic associated polypeptides. Novel immune/hematopoietic polypeptides and antibodies that bind to these polypeptides are provided. Also provided are vectors, host cells, and recombinant and synthetic methods for producing human immune/hematopoietic associated polynucleotides and/or polypeptides. The invention further relates to diagnostic and therapeutic methods useful for diagnosing, treating, preventing and/or prognosing disorders related to the immune system or cells and tissues associated with hematopoiesis, including cancers of cells of hematopoietic origin, and therapeutic methods for treating such disorders. The invention further relates to screening methods for identifying agonists and antagonists of polynucleotides and polypeptides of the invention. The present invention further relates to methods and/or compositions for inhibiting the production and function of the polypeptides of the present invention.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



## **Nucleic Acids, Proteins, and Antibodies**

[001] This application refers to a "Sequence Listing" that is provided only on electronic media in computer readable form pursuant to Administrative Instructions Section 801(a)(i). The Sequence Listing forms a part of this description pursuant to Rule 5.2 and Administrative Instructions Sections 801 to 806, and is hereby incorporated in its entirety.

[002] The Sequence Listing is provided as an electronic file (PC004PCT\_seqList.txt, 76,977,474 bytes in size, created on January 16, 2001) on four identical compact discs (CD-R), labeled "COPY 1," "COPY 2," "COPY 3," and "CRF." The Sequence Listing complies with Annex C of the Administrative Instructions, and may be viewed, for example, on an IBM-PC machine running the MS-Windows operating system by using the V viewer software, version 2000 (see World Wide Web URL: <http://www.fileviewer.com>).

### ***Field of the Invention***

[003] The present invention relates to novel immune system and hematopoietic related (herein "immune/hematopoietic") polynucleotides, the polypeptides encoded by these polynucleotides herein collectively referred to as "immune/hematopoietic antigens," and antibodies that immunospecifically bind these polypeptides, and the use of such immune/hematopoietic polynucleotides, antigens, and antibodies for detecting, treating, preventing and/or prognosing disorders of the immune system, including, but not limited to, the presence of cancer and cancer metastases of cells of hematopoietic origin. More specifically, isolated immune/hematopoietic nucleic acid molecules are provided encoding novel immune/hematopoietic polypeptides. Novel

immune/hematopoietic polypeptides and antibodies that bind to these polypeptides are provided. Also provided are vectors, host cells, and recombinant and synthetic methods for producing human immune/hematopoietic polynucleotides, polypeptides, and/or antibodies. The invention further relates to diagnostic and therapeutic methods useful for diagnosing, treating, preventing and/or prognosing disorders related to hematopoiesis and the immune system, including cancers of cells of hematopoietic origins, and therapeutic methods for treating such disorders. The invention further relates to screening methods for identifying agonists and antagonists of polynucleotides and polypeptides of the invention. The invention further relates to methods and/or compositions for inhibiting or promoting the production and/or function of the polypeptides of the invention.

### ***Background of the Invention***

[004] The immune system is an intricate network composed of cells, tissues and soluble substances that function to protect the body from invasion by foreign substances and pathogens. The major cells of the immune system are white blood cells, including lymphocytes, such as B cells and T cells, and myeloid cells, such as basophils, eosinophils, neutrophils, mast cells, monocytes, macrophages and dendritic cells. The soluble components of the immune system, are molecules (often polypeptides) that are not contained within cells, but rather are found in extracellular fluids such as lymph and blood plasma. Some of the major soluble substances are antibodies, complement proteins, and cytokines.

[005] Cells of the immune system (as well as red blood cells and platelets) are derived from a common precursor stem cell by a process known as hematopoiesis. During fetal life hematopoiesis occurs in the liver and spleen, but in the adult, hematopoiesis occurs mainly in bone marrow. The stem cells from which all blood cells are derived proliferate and differentiate into the various blood cell lineages, (e.g., lymphocytes (B or T cells), myeloid cells (basophils, eosinophils, neutrophils, mast cells, macrophages), platelets, or red blood cells) in response to signals received from other cells (e.g., stromal cells) in the bone marrow microenvironment and also from cytokines. Many of the cytokines that promote the growth and differentiation of

hematopoietic stem cells are known as “colony stimulating factors”. For example, interleukin-3 (IL-3, and also known as multi-colony stimulating factor) and granulocyte macrophage colony stimulation factor (GM-CSF), which are released by activated macrophages T cells, stimulate the production of macrophages and granulocytes (myelopoiesis). Stem cell factor (SCF, c-kit ligand) is a growth factor for primitive lymphoid and myeloid hematopoietic bone marrow progenitor cells expressing the early cell surface marker CD34. Other hematopoietic cytokines/growth factors include, but are not limited to macrophage colony stimulating factor (M-CSF) and granulocyte colony stimulating factor (G-CSF). Interleukins-1, 6, and 7 have also been shown to function as hematopoietic growth factors/cytokines.

[006] The maturation of lymphocytes has an added layer of complexity in that each individual T and B cell generates a unique antigen specific receptor – a B cell receptor (antibody) in the case of B cells or a T cell receptor in the case of T cells. Because it is possible that B and T cells may generate autoreactive antigen receptors, B and T cells undergo negative selection processes that eliminate autoreactive lymphocytes from the circulating pool of mature lymphocytes. Defects in negative selection may contribute to the occurrence of autoimmune disease. In addition, T cells undergo a process of positive selection in which T cells are selected for their ability to interact with the major histocompatibility antigens. In the thymus, T cells also differentiate into one of two classes, CD4+ T helper (Th) cells or CD8+ cytotoxic T cells. The majority of the maturation and selection process occurs in the bone marrow for B cells, whereas T cell progenitor cells migrate from the bone marrow to the thymus where they complete their maturation.

[007] Cells of the immune system circulate throughout the body in both the lymph and the blood. Immune cells will leave the circulatory system and enter the tissues by a process known as diapedesis. Immune cells return to the circulatory system via travel in the lymph. Situated along the lymphatic vessels are lymph nodes, which are small nodular aggregates of lymphoid tissues. The architecture of the lymph node is designed to facilitate acquired immune responses, with antigen presenting cells, B cells and T cells all in close proximity. Antigen presenting cells (APCs, e.g., dendritic cells, macrophages, B cells) display antigen on their surface in the form of peptides associated MHC class II molecules to T helper cells. T helper cells with T-cell

receptors specific for the given antigen become activated if they bind to the peptide MHC complexes and receive co-stimulatory signals (e.g., stimulation of CD28 on the T cell by B7 molecules on the APC). Activated T helper cells proliferate, secrete cytokines, and can stimulate antigen-specific B cells or T cells to become activated. Once activated, cytotoxic T cells proliferate and are able to induce apoptosis of cells expressing specific antigen on their surface as a peptide in the context of MHC Class I molecules. Activated B cells also proliferate and may either enter into germinal center and undergo a process of affinity maturation of their antigen receptor, or differentiate into antibody forming cells (plasma cells) that secrete large quantities of antigen-specific antibody.

[008] Aside from lymphocytes and antigen presenting cells, introduced above, there are several other accessory cells in the immune system including neutrophils, eosinophils, basophils, mast cells, and Natural Killer (NK) cells. NK cells are large granular lymphocytes that have cytotoxic function, especially against cells infected with intracellular pathogens, and may function in the eradication of cancer cells. Neutrophils are phagocytic cells that play a key role in the inflammatory process. Activated mast cells release granules containing histamine and other active agents which are effective against large parasites and also contribute to allergic reactions and asthma. Eosinophils bear Fc receptors for IgG and IgE, and participate in the killing of antibody coated parasites.

[009] The immune system can be classified into the acquired and innate immune system. The cells of the innate immune system (e.g., neutrophils, eosinophils, basophils, mast cells) are not antigen specific and their action is not enhanced by repeated exposure to the same antigen. The cells of the acquired immune system (B and T cells) are antigen specific and repeated exposure of B and T cells to an antigen results in improved immune responses (memory responses) produced by these cell types. The cells and products of the acquired immune system can function to focus the action of the innate immune system. For example, eosinophils are not in themselves antigen specific, but as a result of expression of Fc receptors on their surface, their activity can be focused on a specific antigen to which an antibody response has been made by the acquired immune system. For a more extensive review of the immune

system, see *Fundamental Immunology*, 4th edition, ed. William Paul, Lippincott-Raven Pub. (1998).

[010] As illustrated above, an immune response is seldom carried out by a single cell type, but rather requires the coordinated efforts of several cell types. In order to coordinate an immune response, it is necessary that cells of the immune system communicate with each other and with other cells of the body. Communication between cells may be made by cell-cell contact, between membrane bound molecules on each cell, or by the interaction of soluble components of the immune system with cellular receptors. Usually, such receptors are embedded in the plasma membrane, but there also exist a subset of cytoplasmic and nuclear receptors. Communication, or signaling, between cell types may have one or more of a variety of consequences including, activation, proliferation, differentiation, or apoptosis. Activation and differentiation may result in the expression or secretion of polypeptides, or other molecules, which in turn affect the function of other cells and/or molecules of the immune system.

[011] Signaling molecules of the immune system, including not only cellular receptors and ligands, but also the downstream effectors of the receptors and/or ligands, may be described as immunomodulators. In addition, immunomodulators (also known as biological response modifiers) include microbial or synthetic substances and products of activated cells. The mechanism of action of immunomodulators usually involves a complicated interplay of various regulator and effector systems. Immunomodulators may enhance (immunoprophylaxis, immunostimulation), restore (immunosubstitution, immunorestitution) or suppress (immunosuppression, immunodeviation) immunological functions or activities. Immunomodulators may be, for example, cytokines, cytokine receptors, inhibitors of DNA synthesis, intracellular receptors, or components of signal transduction pathways, some of which are described in more detail below:

#### *Cytokines and Cytokine Receptors*

[012] Cytokines are small soluble proteins produced by one cell that alter the behavior or other properties of another cell or itself. Thus, by definition, cytokines are immunomodulatory molecules. Many cytokines have multiple biological effects and

are critical to the regulation of the immune response. For a review on cytokines, refer to Chapter 11 of *Cellular and Molecular Immunology* by Abbas et al. (1991).

- [013] Immune responses of the acquired immune system can be classified into two broad classes of immune responses: humoral (antibody-mediated) immune responses and cell-mediated immune responses (cell-mediated, i.e., cytotoxic T cell, immune response). Both types of responses require activation of CD4+ T helper cells. Depending on several factors, of which one factor is the cytokine environment, T helper (Th) cells may differentiate into either Th1 cells that promote cell-mediated responses or Th2 cells that promote humoral responses. Th1 cells, which produce interferon (IFN)-gamma, interleukin (IL)-2 and tumor necrosis factor (TNF)-beta, evoke cell-mediated immunity and phagocyte-dependent inflammation. Th2 cells, which produce IL-4, IL-5, IL-6, IL-9, IL-10, and IL-13, evoke strong antibody responses (including those of the IgE class) and eosinophil accumulation, but inhibit several functions of phagocytic cells (phagocyte-independent inflammation). The presence of Th1 or Th2 T cells can have a dramatic effect on the outcome of infection. A Th1 response during the course of infection by the intracellular bacterium *mycobacterium leprae* (*M. leprae*) is protective, whereas a Th2 response is much less so. Patients that make Th2 response to *M. leprae* develop full-blown lepromatous leprosy which is eventually fatal. The (mis)regulation of Th1 and Th2 responses have been implicated in the pathogenesis of several diseases, including several organ-specific autoimmune disorders such as Crohn's disease, sarcoidosis, acute kidney allograft rejection, some unexplained recurrent abortions. For a review on Th1 and Th2 subsets, see Romagnani, *Ann. Allergy Asthma Immunol.* 85:9-18 (2000).
- [014] From the preceding example it is apparent that cytokines have play key roles on the class and effectiveness of the immune response. It is important to note that cytokines have effects on cell of both the innate and acquired immune systems and are produced by both immune and non-immune cells types.
- [015] Other cytokines such as interferon-alpha (secreted by leukocytes) and interferon-beta (secreted by fibroblasts and many other cell types) are cytokines that function to target the immune system towards fighting viral infections. The binding of interferon-alpha and -beta to cells results in a cellular signalling cascade which ultimately results in the inhibition of viral replication in infected cells, the upregulation

of MHC class I expression on cells, and the activation of Natural Killer (NK) cells. Interferons are useful in the diagnosis, treatment and prevention of viral infections and cancers.

*Intracellular immunomodulators.*

[016] Immunomodulatory proteins are not only cytokines or cytokine receptors. They may also be located intracellularly. For, example they may be intracellular components of a signaling pathway, or even intracellular receptors for certain signaling molecules such as steroids. One example of intracellular immunomodulatory proteins are the immunophilins such as cyclophilin and FK binding protein (FKBP). These immunophilins are peptidyl-prolyl cis-trans isomerases, though their enzymatic ability may be distinct from their role as immunomodulators. When these molecules are bound by the drugs, Cyclosporin A and FK506, respectively, they in turn inhibit the action of activated calcineurin. Calcineurin is a calcium activated serine/threonine kinase which dephosphorylates the transcription factor Nuclear Factor of Activated T cells (NF-AT). Upon dephosphorylation, NF-AT enters the nucleus and induces the transcription of several genes including IL-2. In sum, the immunophilin:drug complexes are able to inhibit clonal expansion of T cells by inhibiting IL-2 synthesis. In addition, FKBP when bound to another drug, rapamycin, can also inhibit the signaling of IL-2 through the IL-2 receptor. FKBP:rapamycin complexes accomplish the inhibition of IL-2 signaling not by binding to calcineurin, but by binding to and inactivating the protein kinases associated with IL-2 signaling resulting in the same outcome, the inhibition of T cell clonal expansion.

[017] Defects in any one or more of the components of the immune system can lead to disease or susceptibility to infectious diseases. Two major classes of immune system disorders are autoimmune diseases, and immunodeficiencies. In autoimmunity, the effector mechanisms of the immune system (e.g., antigen specific antibodies and cellular cytotoxicity, e.g., of cytotoxic T cells, or natural killer cells) are misdirected at self rather than foreign antigens resulting in tissue destruction. Diseases classified as or associated with immunodeficiencies are diseases in which the immune system is unable to mount an effective immune response. A classic example of an immunodeficiency is X-linked agammaglobulinemia in which an intracellular

signalling molecule expressed in B lymphocytes (Bruton's tyrosine kinase) is defective. The loss of function of this kinase prevents B cell maturation, thus patients with X linked agammaglobulinemia do not have mature B cells and are unable to make antibody, and as a result are susceptible to infection.

- [018] The discovery of new human immune/hematopoietic polynucleotides, the polypeptides encoded by them, and antibodies that immunospecifically bind these polypeptides, satisfies a need in the art by providing new compositions which are useful in the diagnosis, treatment, prevention and/or prognosis of disorders of the immune system, including, but not limited to, autoimmune disorders, (e.g., systemic lupus erythematosus, rheumatoid arthritis, idiopathic thrombocytopenic purpura and multiple sclerosis) and immunodeficiencies (e.g., X-linked agammaglobulinemia, severe combined immunodeficiency, Wiskott-Aldrich syndrome, and ataxia telangiectasia). Additionally, immune/hematopoietic molecules would be useful as agents to boost immune responsiveness to pathogens or to suppress immune reactions, for example as is necessary in conjunction with organ transplantation.

### *Summary of the Invention*

- [019] The present invention relates to novel immune/hematopoietic related polynucleotides, the polypeptides encoded by these polynucleotides herein collectively referred to as "immune/hematopoietic antigens," and antibodies that immunospecifically bind these polypeptides, and the use of such immune/hematopoietic polynucleotides, antigens, and antibodies for detecting, treating, preventing and/or prognosing disorders of the immune system, including, but not limited to, the presence of cancer and cancer metastases of cells of hematopoietic origin. More specifically, isolated immune/hematopoietic nucleic acid molecules are provided encoding novel immune/hematopoietic polypeptides. Novel immune/hematopoietic polypeptides and antibodies that bind to these polypeptides are provided. Also provided are vectors, host cells, and recombinant and synthetic methods for producing human immune/hematopoietic polynucleotides, polypeptides, and/or antibodies. The invention further relates to diagnostic and therapeutic methods useful for diagnosing, treating, preventing and/or prognosing disorders related to the immune system or hematopoietic cells or tissues, including cancers of cells of



hematopoietic origin, and therapeutic methods for treating such disorders. The invention further relates to screening methods for identifying agonists and antagonists of polynucleotides and polypeptides of the invention. The invention further relates to methods and/or compositions for inhibiting or promoting the production and/or function of the polypeptides of the invention.

### *Detailed Description*

#### **Tables**

[020] Table 1A summarizes some of the polynucleotides encompassed by the invention (including cDNA clones related to the sequences (Clone ID NO:Z), contig sequences (contig identifier (Contig ID:)) and contig nucleotide sequence identifier (SEQ ID NO:X)) and further summarizes certain characteristics of these polynucleotides and the polypeptides encoded thereby. The first column provides a unique clone identifier, "Clone ID NO:Z", for a cDNA plasmid related to each immune/hematopoietic associated contig sequence disclosed in Table 1A. The second column provides a unique contig identifier, "Contig ID:" for each of the contig sequences disclosed in Table 1A. The third column provides the sequence identifier, "SEQ ID NO:X", for each of the contig polynucleotide sequences disclosed in Table 1A. The fourth column, "ORF (From-To)", provides the location (i.e., nucleotide position numbers) within the polynucleotide sequence of SEQ ID NO:X that delineate the preferred open reading frame (ORF) shown in the sequence listing and referenced in Table 1A as SEQ ID NO:Y (column 5). Column 6 lists residues comprising predicted epitopes contained in the polypeptides encoded by each of the preferred ORFs (SEQ ID NO:Y). Identification of potential immunogenic regions was performed according to the method of Jameson and Wolf (CABIOS, 4:181-186 (1988)); specifically, the Genetics Computer Group (GCG) implementation of this algorithm, embodied in the program PEPTIDESTRUCTURE (Wisconsin Package v10.0, Genetics Computer Group (GCG), Madison, Wisc.). This method returns a measure of the probability that a given residue is found on the surface of the protein. Regions where the antigenic index score is greater than 0.9 over at least 6 amino acids are indicated in Table 1A as "Predicted Epitopes." In particular embodiments, immune/hematopoietic associated polypeptides of the invention comprise, or

alternatively consist of, one, two, three, four, five or more of the predicted epitopes described in Table 1A. It will be appreciated that depending on the analytical criteria used to predict antigenic determinants, the exact address of the determinant may vary slightly. Column 7, "Tissue Distribution" shows the expression profile of tissue, cells, and/or cell line libraries which express the polynucleotides of the invention. The first number in column 7 (preceding the colon), represents the tissue/cell source identifier code corresponding to the code and description provided in Table 4. Expression of these polynucleotides was not observed in the other tissues and/or cell libraries tested. For those identifier codes in which the first two letters are not "AR", the second number in column 7 (following the colon) represents the number of times a sequence corresponding to the reference polynucleotide sequence (e.g., SEQ ID NO:X) was identified in the tissue/cell source. Those tissue/cell source identifier codes in which the first two letters are "AR" designate information generated using DNA array technology. Utilizing this technology, cDNAs were amplified by PCR and then transferred, in duplicate, onto the array. Gene expression was assayed through hybridization of first strand cDNA probes to the DNA array. cDNA probes were generated from total RNA extracted from a variety of different tissues and cell lines. Probe synthesis was performed in the presence of  $^{33}\text{P}$  dCTP, using oligo(dT) to prime reverse transcription. After hybridization, high stringency washing conditions were employed to remove non-specific hybrids from the array. The remaining signal, emanating from each gene target, was measured using a Phosphorimager. Gene expression was reported as Phosphor Stimulating Luminescence (PSL) which reflects the level of phosphor signal generated from the probe hybridized to each of the gene targets represented on the array. A local background signal subtraction was performed before the total signal generated from each array was used to normalize gene expression between the different hybridizations. The value presented after "[array code]:" represents the mean of the duplicate values, following background subtraction and probe normalization. One of skill in the art could routinely use this information to identify normal and/or diseased tissue(s) which show a predominant expression pattern of the corresponding polynucleotide of the invention or to identify polynucleotides which show predominant and/or specific tissue and/or cell expression. Column 8, "Cytologic Band," provides the chromosomal location of polynucleotides

corresponding to SEQ ID NO:X. Chromosomal location was determined by finding exact matches to EST and cDNA sequences contained in the NCBI (National Center for Biotechnology Information) UniGene database. Given a presumptive chromosomal location, disease locus association was determined by comparison with the Morbid Map, derived from Online Mendelian Inheritance in Man (Online Mendelian Inheritance in Man, OMIM™. McKusick-Nathans Institute for Genetic Medicine, Johns Hopkins University (Baltimore, MD) and National Center for Biotechnology Information, National Library of Medicine (Bethesda, MD) 2000. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>). If the putative chromosomal location of the Query overlapped with the chromosomal location of a Morbid Map entry, an OMIM identification number is provided in Table 1A, column 9 labeled "OMIM Disease Reference(s)". A key to the OMIM reference identification numbers is provided in Table 5.

[021] Table 1B summarizes additional polynucleotides encompassed by the invention (including cDNA clones related to the sequences (Clone ID NO:Z), contig sequences (contig identifier (Contig ID:) contig nucleotide sequence identifiers (SEQ ID NO:X)), and genomic sequences (SEQ ID NO:B). The first column provides a unique clone identifier, "Clone ID NO:Z", for a cDNA clone related to each contig sequence. The second column provides the sequence identifier, "SEQ ID NO:X", for each contig sequence. The third column provides a unique contig identifier, "Contig ID:" for each contig sequence. The fourth column, provides a BAC identifier "BAC ID NO:A" for the BAC clone referenced in the corresponding row of the table. The fifth column provides the nucleotide sequence identifier, "SEQ ID NO:B" for a fragment of the BAC clone identified in column four of the corresponding row of the table. The sixth column, "Exon From-To", provides the location (i.e., nucleotide position numbers) within the polynucleotide sequence of SEQ ID NO:B which delineate certain polynucleotides of the invention that are also exemplary members of polynucleotide sequences that encode polypeptides of the invention (e.g., polypeptides containing amino acid sequences encoded by the polynucleotide sequences delineated in column six, and fragments and variants thereof).

[022] Table 2 summarizes homology and features of some of the polypeptides of the invention. The first column provides a unique clone identifier, "Clone ID NO:Z",

corresponding to a cDNA disclosed in Table 1A. The second column provides the unique contig identifier, "Contig ID:" corresponding to contigs in Table 1A and allowing for correlation with the information in Table 1A. The third column provides the sequence identifier, "SEQ ID NO:X", for the contig polynucleotide sequences. The fourth column provides the analysis method by which the homology/identity disclosed in the row was determined. Comparisons were made between polypeptides encoded by the polynucleotides of the invention and either a non-redundant protein database (herein referred to as "NR"), or a database of protein families (herein referred to as "PFAM") as further described below. The fifth column provides a description of PFAM/NR hits having significant matches to a polypeptide of the invention. Column six provides the accession number of the PFAM/NR hit disclosed in the fifth column. Column seven, "Score/Percent Identity", provides a quality score or the percent identity, of the hit disclosed in column five. Columns 8 and 9, "NT From" and "NT To" respectively, delineate the polynucleotides in "SEQ ID NO:X" that encode a polypeptide having a significant match to the PFAM/NR database as disclosed in the fifth column. In specific embodiments, polypeptides of the invention comprise, or alternatively consist of, an amino acid sequence encoded by the polynucleotides in SEQ ID NO:X as delineated in columns 8 and 9, or fragments or variants thereof.

[023] Table 3 provides polynucleotide sequences that may be disclaimed according to certain embodiments of the invention. The first column provides a unique clone identifier, "Clone ID NO:Z", for a cDNA clone related to immune/hematopoietic associated contig sequences disclosed in Table 1A. The second column provides the sequence identifier, "SEQ ID NO:X", for contig polynucleotide sequences disclosed in Table 1A. The third column provides the unique contig identifier, "Contig ID", for contigs disclosed in Table 1A. The fourth column provides a unique integer 'a' where 'a' is any integer between 1 and the final nucleotide minus 15 of SEQ ID NO:X, represented as "Range of a", and the fifth column provides a unique integer 'b' where 'b' is any integer between 15 and the final nucleotide of SEQ ID NO:X, represented as "Range of b", where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:X, and where b is greater than or equal to a + 14. For each of the polynucleotides shown as SEQ ID NO:X, the uniquely defined integers can be substituted into the general formula of a-b, and used to describe polynucleotides which

may be preferably excluded from the invention. In certain embodiments, preferably excluded from the polynucleotides of the invention (including polynucleotide fragments and variants as described herein and diagnostic and/or therapeutic uses based on these polynucleotides) are at least one, two, three, four, five, ten, or more of the polynucleotide sequence(s) having the accession number(s) disclosed in the sixth column of this Table (including for example, published sequence in connection with a particular BAC clone). In further embodiments, preferably excluded from the invention are the specific polynucleotide sequence(s) contained in the clones corresponding to at least one, two, three, four, five, ten, or more of the available material having the accession numbers identified in the sixth column of this Table (including for example, the actual sequence contained in an identified BAC clone).

[024] Table 4 provides a key to the tissue/cell source identifier code disclosed in Table 1A, column 7. Column 1 provides the key to the tissue/cell source identifier code disclosed in Table 1A, Column 7. Columns 2-5 provide a description of the tissue or cell source. Codes corresponding to diseased tissues are indicated in column 6 with the word "disease". The use of the word "disease" in column 6 is non-limiting. The tissue or cell source may be specific (e.g. a neoplasm), or may be disease-associated (e.g., a tissue sample from a normal portion of a diseased organ). Furthermore, tissues and/or cells lacking the "disease" designation may still be derived from sources directly or indirectly involved in a disease state or disorder, and therefore may have a further utility in that disease state or disorder. In numerous cases where the tissue/cell source is a library, column 7 identifies the vector used to generate the library.

[025] Table 5 provides a key to the OMIM™ reference identification numbers disclosed in Table 1A, column 9. OMIM reference identification numbers (Column 1) were derived from Online Mendelian Inheritance in Man (Online Mendelian Inheritance in Man, OMIM™, McKusick-Nathans Institute for Genetic Medicine, Johns Hopkins University (Baltimore, MD) and National Center for Biotechnology Information, National Library of Medicine, (Bethesda, MD) 2000. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>). Column 2 provides diseases associated with the cytologic band disclosed in Table 1A, column 8, as determined from the Morbid Map database.

- [026] Table 6 summarizes ATCC Deposits, Deposit dates, and ATCC designation numbers of deposits made with the ATCC in connection with the present application.
- [027] Table 7 shows the cDNA libraries sequenced, tissue source description, vector information and ATCC designation numbers relating to these cDNA libraries.
- [028] Table 8 provides a physical characterization of clones encompassed by the invention. The first column provides the unique clone identifier, "Clone ID NO:Z", for certain cDNA clones of the invention, as described in Table 1A. The second column provides the size of the cDNA insert contained in the corresponding cDNA clone.

### **Definitions**

- [029] The following definitions are provided to facilitate understanding of certain terms used throughout this specification.
- [030] In the present invention, "isolated" refers to material removed from its original environment (e.g., the natural environment if it is naturally occurring), and thus is altered "by the hand of man" from its natural state. For example, an isolated polynucleotide could be part of a vector or a composition of matter, or could be contained within a cell, and still be "isolated" because that vector, composition of matter, or particular cell is not the original environment of the polynucleotide. The term "isolated" does not refer to genomic or cDNA libraries, whole cell total or mRNA preparations, genomic DNA preparations (including those separated by electrophoresis and transferred onto blots), sheared whole cell genomic DNA preparations or other compositions where the art demonstrates no distinguishing features of the polynucleotide sequences of the present invention.
- [031] As used herein, a "polynucleotide" refers to a molecule having a nucleic acid sequence encoding SEQ ID NO:Y or a fragment or variant thereof, a nucleic acid sequence contained in SEQ ID NO:X (as described in column 3 of Table 1A) or the complement thereof, a cDNA sequence contained in Clone ID NO:Z (as described in column 1 of Table 1A and contained within a library deposited with the ATCC); a nucleotide sequence encoding the polypeptide encoded by a nucleotide sequence in SEQ ID NO:B as defined in column 6 of Table 1B or a fragment or variant thereof; or a nucleotide coding sequence in SEQ ID NO:B as defined in column 6 of Table 1B or

the complement thereof. For example, the polynucleotide can contain the nucleotide sequence of the full length cDNA sequence, including the 5' and 3' untranslated sequences, the coding region, as well as fragments, epitopes, domains, and variants of the nucleic acid sequence. Moreover, as used herein, a "polypeptide" refers to a molecule having an amino acid sequence encoded by a polynucleotide of the invention as broadly defined (obviously excluding poly-Phenylalanine or poly-Lysine peptide sequences which result from translation of a polyA tail of a sequence corresponding to a cDNA).

[032] As used herein, a "immune/hematopoietic antigen" refers collectively to any polynucleotide disclosed herein (e.g., a nucleic acid sequence contained in SEQ ID NO:X or the complement thereof, or cDNA sequence contained in Clone ID NO:Z, or a nucleotide sequence encoding the polypeptide encoded by a nucleotide sequence in SEQ ID NO:B as defined in column 6 of Table 1B, or a nucleotide coding sequence in SEQ ID NO:B as defined in column 6 of Table 1B or the complement thereof and fragments or variants thereof as described herein) or any polypeptide disclosed herein (e.g., an amino acid sequence contained in SEQ ID NO:Y, an amino acid sequence encoded by SEQ ID NO:X, or the complement thereof, an amino acid sequence encoded by the cDNA sequence contained in Clone ID NO:Z, an amino acid sequence encoded by SEQ ID NO:B, or the complement thereof, and fragments or variants thereof as described herein). These immune/hematopoietic antigens have been determined to be predominantly expressed in hematopoietic tissues (e.g., bone marrow, fetal liver, and fetal spleen) or cells and tissues of the immune system (e.g., lymph nodes, spleen, B cells, T cells, monocytes, macrophages, dendritic cells, neutrophils, mast cells, basophils, and eosinophils) including normal or diseased tissues (as shown in Table 1A column 7 and Table 4).

[033] In the present invention, "SEQ ID NO:X" was often generated by overlapping sequences contained in multiple clones (contig analysis). A representative clone containing all or most of the sequence for SEQ ID NO:X is deposited at Human Genome Sciences, Inc. (HGS) in a catalogued and archived library. As shown, for example, in column 1 of Table 1A, each clone is identified by a cDNA Clone ID (identifier generally referred to herein as Clone ID NO:Z). Each Clone ID is unique to an individual clone and the Clone ID is all the information needed to retrieve a given

clone from the HGS library. Furthermore, certain clones disclosed in this application have been deposited with the ATCC on October 5, 2000, having the ATCC designation numbers PTA 2574 and PTA 2575; and on January 5, 2001, having the depositor reference numbers TS-1, TS-2, AC-1, and AC-2. In addition to the individual cDNA clone deposits, most of the cDNA libraries from which the clones were derived were deposited at the American Type Culture Collection (hereinafter "ATCC"). Table 7 provides a list of the deposited cDNA libraries. One can use the Clone ID NO:Z to determine the library source by reference to Tables 6 and 7. Table 7 lists the deposited cDNA libraries by name and links each library to an ATCC Deposit. Library names contain four characters, for example, "HTWE." The name of a cDNA clone (Clone ID NO:Z) isolated from that library begins with the same four characters, for example "HTWEP07". As mentioned below, Table 1A correlates the Clone ID NO:Z names with SEQ ID NO:X. Thus, starting with an SEQ ID NO:X, one can use Tables 1A, 6 and 7 to determine the corresponding Clone ID NO:Z, which library it came from and which ATCC deposit the library is contained in. Furthermore, it is possible to retrieve a given cDNA clone from the source library by techniques known in the art and described elsewhere herein. The ATCC is located at 10801 University Boulevard, Manassas, Virginia 20110-2209, USA. The ATCC deposits were made pursuant to the terms of the Budapest Treaty on the international recognition of the deposit of microorganisms for the purposes of patent procedure.

- [034] In specific embodiments, the polynucleotides of the invention are at least 15, at least 30, at least 50, at least 100, at least 125, at least 500, or at least 1000 continuous nucleotides but are less than or equal to 300 kb, 200 kb, 100 kb, 50 kb, 15 kb, 10 kb, 7.5 kb, 5 kb, 2.5 kb, 2.0 kb, or 1 kb, in length. In a further embodiment, polynucleotides of the invention comprise a portion of the coding sequences, as disclosed herein, but do not comprise all or a portion of any intron. In another embodiment, the polynucleotides comprising coding sequences do not contain coding sequences of a genomic flanking gene (i.e., 5' or 3' to the gene of interest in the genome). In other embodiments, the polynucleotides of the invention do not contain the coding sequence of more than 1000, 500, 250, 100, 50, 25, 20, 15, 10, 5, 4, 3, 2, or 1 genomic flanking gene(s).



[035] A "polynucleotide" of the present invention also includes those polynucleotides capable of hybridizing, under stringent hybridization conditions, to sequences contained in SEQ ID NO:X, or the complement thereof (e.g., the complement of any one, two, three, four, or more of the polynucleotide fragments described herein), the polynucleotide sequence delineated in columns 8 and 9 of Table 2 or the complement thereof, and/or cDNA sequences contained in Clone ID NO:Z (e.g., the complement of any one, two, three, four, or more of the polynucleotide fragments, or the cDNA clone within the pool of cDNA clones deposited with the ATCC, described herein) and/or the polynucleotide sequence delineated in column 6 of Table 1B or the complement thereof. "Stringent hybridization conditions" refers to an overnight incubation at 42 degree C in a solution comprising 50% formamide, 5x SSC (750 mM NaCl, 75 mM trisodium citrate), 50 mM sodium phosphate (pH 7.6), 5x Denhardt's solution, 10% dextran sulfate, and 20 µg/ml denatured, sheared salmon sperm DNA, followed by washing the filters in 0.1x SSC at about 65 degree C.

[036] Also contemplated are nucleic acid molecules that hybridize to the polynucleotides of the present invention at lower stringency hybridization conditions. Changes in the stringency of hybridization and signal detection are primarily accomplished through the manipulation of formamide concentration (lower percentages of formamide result in lowered stringency), salt conditions, or temperature. For example, lower stringency conditions include an overnight incubation at 37 degree C in a solution comprising 6X SSPE (20X SSPE = 3M NaCl; 0.2M  $\text{NaH}_2\text{PO}_4$ ; 0.02M EDTA, pH 7.4), 0.5% SDS, 30% formamide, 100 µg/ml salmon sperm blocking DNA; followed by washes at 50 degree C with 1XSSPE, 0.1% SDS. In addition, to achieve even lower stringency, washes performed following stringent hybridization can be done at higher salt concentrations (e.g. 5X SSC).

[037] Note that variations in the above conditions may be accomplished through the inclusion and/or substitution of alternate blocking reagents used to suppress background in hybridization experiments. Typical blocking reagents include Denhardt's reagent, BLOTTO, heparin, denatured salmon sperm DNA, and commercially available proprietary formulations. The inclusion of specific blocking reagents may require modification of the hybridization conditions described above, due to problems with compatibility.

- [038] Of course, a polynucleotide which hybridizes only to polyA<sup>+</sup> sequences (such as any 3' terminal polyA<sup>+</sup> tract of a cDNA shown in the sequence listing), or to a complementary stretch of T (or U) residues, would not be included in the definition of "polynucleotide," since such a polynucleotide would hybridize to any nucleic acid molecule containing a poly (A) stretch or the complement thereof (e.g., practically any double-stranded cDNA clone generated using oligo dT as a primer).
- [039] The polynucleotide of the present invention can be composed of any polyribonucleotide or polydeoxribonucleotide, which may be unmodified RNA or DNA or modified RNA or DNA. For example, polynucleotides can be composed of single- and double-stranded DNA, DNA that is a mixture of single- and double-stranded regions, single- and double-stranded RNA, and RNA that is mixture of single- and double-stranded regions, hybrid molecules comprising DNA and RNA that may be single-stranded or, more typically, double-stranded or a mixture of single- and double-stranded regions. In addition, the polynucleotide can be composed of triple-stranded regions comprising RNA or DNA or both RNA and DNA. A polynucleotide may also contain one or more modified bases or DNA or RNA backbones modified for stability or for other reasons. "Modified" bases include, for example, tritylated bases and unusual bases such as inosine. A variety of modifications can be made to DNA and RNA; thus, "polynucleotide" embraces chemically, enzymatically, or metabolically modified forms.
- [040] The polypeptide of the present invention can be composed of amino acids joined to each other by peptide bonds or modified peptide bonds, i.e., peptide isosteres, and may contain amino acids other than the 20 gene-encoded amino acids. The polypeptides may be modified by either natural processes, such as posttranslational processing, or by chemical modification techniques which are well known in the art. Such modifications are well described in basic texts and in more detailed monographs, as well as in a voluminous research literature. Modifications can occur anywhere in a polypeptide, including the peptide backbone, the amino acid side-chains and the amino or carboxyl termini. It will be appreciated that the same type of modification may be present in the same or varying degrees at several sites in a given polypeptide. Also, a given polypeptide may contain many types of modifications. Polypeptides may be branched, for example, as a result of

ubiquitination, and they may be cyclic, with or without branching. Cyclic, branched, and branched cyclic polypeptides may result from posttranslation natural processes or may be made by synthetic methods. Modifications include acetylation, acylation, ADP-ribosylation, amidation, covalent attachment of flavin, covalent attachment of a heme moiety, covalent attachment of a nucleotide or nucleotide derivative, covalent attachment of a lipid or lipid derivative, covalent attachment of phosphatidylinositol, cross-linking, cyclization, disulfide bond formation, demethylation, formation of covalent cross-links, formation of cysteine, formation of pyroglutamate, formylation, gamma-carboxylation, glycosylation, GPI anchor formation, hydroxylation, iodination, methylation, myristoylation, oxidation, pegylation, proteolytic processing, phosphorylation, prenylation, racemization, selenoylation, sulfation, transfer-RNA mediated addition of amino acids to proteins such as arginylation, and ubiquitination. (See, for instance, PROTEINS - STRUCTURE AND MOLECULAR PROPERTIES, 2nd Ed., T. E. Creighton, W. H. Freeman and Company, New York (1993); POSTTRANSLATIONAL COVALENT MODIFICATION OF PROTEINS, B. C. Johnson, Ed., Academic Press, New York, pgs. 1-12 (1983); Seifter et al., Meth. Enzymol. 182:626-646 (1990); Rattan et al., Ann. N.Y. Acad. Sci. 663:48-62 (1992).)

[041] "SEQ ID NO:X" refers to a polynucleotide sequence described, for example, in Tables 1A or 2, while "SEQ ID NO:Y" refers to a polypeptide sequence described in column 5 of Table 1A. SEQ ID NO:X is identified by an integer specified in column 3 of Table 1A. The polypeptide sequence SEQ ID NO:Y is a translated open reading frame (ORF) encoded by polynucleotide SEQ ID NO:X. "Clone ID NO:Z" refers to a cDNA clone described in column 1 of Table 1A.

[042] "A polypeptide having biological activity" refers to a polypeptide exhibiting activity similar to, but not necessarily identical to, an activity of a polypeptide of the present invention, including mature forms, as measured in a particular biological assay, with or without dose dependency. In the case where dose dependency does exist, it need not be identical to that of the polypeptide, but rather substantially similar to the dose-dependence in a given activity as compared to the polypeptide of the present invention (i.e., the candidate polypeptide will exhibit greater activity or not more than about 25-fold less and, preferably, not more than about tenfold less activity,

and most preferably, not more than about three-fold less activity relative to the polypeptide of the present invention).

[043] Table 1A summarizes some of the immune/hematopoietic associated polynucleotides encompassed by the invention (including contig sequences (SEQ ID NO:X) and clones (Clone ID NO:Z) and further summarizes certain characteristics of these polynucleotides and the polypeptides encoded thereby.

### **Polynucleotides and Polypeptides**

#### **TABLE 1A**

Clone ID NO.: Z	Contig ID:	SEQ ID NO.: X	ORF (From-To)	AA SEQ ID NO.: Y	Predicted Epitopes	Tissue Distribution Library code: count (see Table IV for Library Codes)	Cytologic Band	OMIM Disease Reference(s):
HAMHB21	961376	11	17 - 2389	9763		AR089: 3, AR061: 1 H0271: 18, H0556: 9, H0265: 8, H0581: 8, L0761: 4, H0543: 4, H0422: 4, H0656: 3, H0457: 3, L0766: 3, T0002: 2, L0748: 2, H0220: 1, H0650: 1, S0282: 1, H0610: 1, H0069: 1, H0633: 1, H0179: 1, H0416: 1, H0031: 1, H0090: 1, T0041: 1, H0560: 1, H0529: 1, L0667: 1, L0649: 1, L0803: 1, L0659: 1, L0666: 1, S0052: 1, S0216: 1, H0702: 1, H0518: 1, H0521: 1, L0750: 1, H0445: 1, H0423: 1, H0677: 1 and H0506: 1.		
HASAX16	573692	12	138 - 302	9764	Tyr-20 to Ile-33.	H0004: 2		
HASAX74	526312	13	79 - 318	9765		H0004: 1, H0090: 1 and H0543: 1.		
HASAY89	958768	14	125 - 280	9766	Glu-28 to Lys-34.	H0004: 1, L0749: 1 and H0445: 1.		
HASAY94	521835	15	2 - 103	9767	Thr-10 to Asn-22.	H0004: 2		
HBCAL36	931477	16	3 - 440	9768	Glu-26 to Ser-31, Glu-36 to Gln-55, Glu-70 to Asn-82, Ser-93 to Pro-98, Ser-115 to Ser-121.	H0370: 1, H0581: 1 and H0264: 1.		
HBCAL39	964871	17	333 - 491	9769	Arg-1 to Ser-6.	H0255: 2, H0370: 2 and S0053: 1.		
HBCAM74	864366	18	1 - 348	9770	Pro-29 to Ser-37.	H0341: 1, H0370: 1 and		

HBCAR79	573989	19	186 - 359	9771	Pro-12 to Trp-31.	L0520: 1.	
HBCAS69	669802	20	3 - 245	9772		H0370: 2	
HBCAT17	503573	21	48 - 266	9773	Trp-1 to Ser-11.	H0370: 1 and H0063: 1. S0114: 1, H0370: 1, H0075: 1 and L0758: 1.	
HBCAT63	573993	22	1 - 96	9774		H0370: 2	3q26 165215, 222900, 600049
HBCBM52	932514	23	464 - 574	9775		H0370: 1, T0042: 1 and H0423: 1.	
HBCBX12	861018	24	42 - 233	9776	Gly-1 to Gly-6.	H0271: 2 and H0370: 1.	
HBCBZ05	922800	25	539 - 727	9777	Pro-23 to Pro-29.	H0370: 2	
HBDAC79	935414	26	1 - 366	9778	Met-4 to Lys-12, Phe-41 to Phe-50.	AR089: 2, AR061: 1 H0556: 2, L0766: 2, S0418: 1, S0442: 1, H0393: 1, H0261: 1, S0222: 1, H0545: 1, H0050: 1, S0628: 1, H0551: 1, H0494: 1, S0144: 1, S0002: 1, H0529: 1, H0521: 1, L0439: 1, L0759: 1, S0308: 1, L0366: 1 and H0506: 1.	
HBDAD04	614849	27	87 - 293	9779		H0063: 1 and S0308: 1.	
HBDAD51	725481	28	275 - 484	9780		H0255: 1, L0756: 1 and S0308: 1.	19q13.4 134790, 191044, 600040, 600138
HBDAD61	864338	29	124 - 306	9781	Len-49 to Ser-54.	H0486: 1, H0522: 1 and S0308: 1.	
HBIAB59	557972	30	223 - 369	9782	Arg-11 to Ser-28.	H0318: 1 and H0264: 1.	
HBIAC23	529753	31	3 - 176	9783		H0265: 1 and H0318: 1.	
HBIAG72	722723	32	2 - 217	9784	Ser-1 to Pro-7.	H0318: 2	
HBIJA91	677397	33	9 - 308	9785	Lys-38 to Ser-43.	H0318: 2	
HBIJA75	953840	34	120 - 275	9786		H0318: 4	
HBIAB85	675904	35	3 - 83	9787		H0305: 1 and H0318: 1.	
HBIAY57	527998	36	2 - 271	9788		H0318: 1 and S0053: 1.	
HBIAY76	527908	37	55 - 300	9789	Lys-3 to Trp-9.	H0318: 2	
HBIAY91	828026	38	17 - 205	9790		H0318: 2	

HB1BM14	781398	39	79 - 189	9791			H0254: 2 and H0318: 1.	
HB1BR94	527903	40	177 - 344	9792			H0318: 2	
HB1BU55	527112	41	137 - 271	9793		Gly-1 to Pro-6.	H0318: 2	
HB1CD43	714390	42	20 - 145	9794			H0318: 2	
HB1CD88	697628	43	158 - 334	9795		Ile-39 to Gln-48.	H0318: 1 and H0445: 1.	
HB1C168	823468	44	99 - 182	9796			H0318: 1 and H0445: 1.	
HB1CO81	527711	45	1 - 132	9797		Ser-28 to Arg-44.	H0318: 2	
HB1CR51	847946	46	39 - 185	9798		Pro-29 to Thr-36.	T0002: 1 and H0318: 1.	
HB1CR90	527702	47	206 - 331	9799			S0114: 1 and H0318: 1.	
HB1DL73	531104	48	64 - 171	9800			H0318: 2	
HB1DN14	856216	49	89 - 316	9801		Gln-46 to Gln-54.	H0318: 1 and S0344: 1.	
HB1DO70	752830	50	2 - 148	9802			H0318: 2	
HB1DP32	573846	51	1 - 117	9803		Lys-1 to Phe-6.	H0318: 2	
HB1DP41	494836	52	1 - 153	9804			H0318: 2	
HB1DQ75	847935	53	3 - 209	9805			H0318: 2	
HB1DT05	932302	54	38 - 100	9806			H0318: 2	
HB1DT47	573728	55	18 - 98	9807			H0318: 2	
HB1DW23	919383	56	151 - 420	9808		Gln-1 to Lys-15.	H0318: 2	
HB1DW36	573847	57	165 - 377	9809		Lys-19 to Gln-24, Lys-78 to Leu-83.	H0254: 1, H0318: 1 and L0599: 1.	
HB1DX18	795732	58	267 - 557	9810			H0318: 3	
HB1DX51	716395	59	245 - 391	9811		Leu-2 to Asn-15.	H0318: 1 and S0053: 1.	
HB1EA22	674872	60	35 - 208	9812			H0318: 1, H0090: 1, L0766: 12 1, L0748: 1 and L0779: 1.	
HB1EA25	589249	61	221 - 466	9813		Asp-15 to Arg-20, Ser-39 to Tyr-44, Gln-54 to Gly-60.	H0318: 3	
HB1EA44	973376	62	292 - 459	9814			H0318: 2 and L0748: 1.	
HB1EA65	934994	63	342 - 518	9815		Asp-5 to Trp-12, Arg-18 to Gln-28.	AR054: 10, AR051: 2, AR050: 1	
HB1EA90	895961	64	271 - 516	9816			H0306: 1, H0318: 1, L0766: 1 and L0776: 1.	
HB1ED66	787251	65	10 - 174	9817			H0318: 1 and H0264: 1.	
HB1JEE29	888625	66	98 - 244	9818			AR054: 21, AR051: 14.	

HBJEE30	531103	67	2 - 229	9819		AR050: 14 H0090: 2, H0318: 1 and S0426: 1.		
HBJEH70	971161	68	1 - 78	9820		H0318: 2 and L0766: 1.		
HBJEH42	669495	69	140 - 424	9821		H0255: 1 and H0318: 1.		
HBJEI21	671201	70	80 - 202	9822		H0318: 2		
HBJEI29	693490	71	117 - 425	9823		Asp-26 to Pro-33. Arg-2 to Pro-15. Pro-37 to Trp-52.		
HBJEI83	847920	72	115 - 264	9824		H0318: 1, L0766: 1 and H0445: 1.		
HBJEO29	693491	73	2 - 190	9825		H0318: 2		
HBJEP15	847843	74	54 - 257	9826		Lys-43 to Ser-49.		
HBJEP73	764573	75	105 - 227	9827		AR051: 21, AR054: 19, AR050: 13		
HBJER19	953804	76	101 - 262	9828		H0318: 2		
HBJES44	715846	77	3 - 380	9829		H0318: 2		
HBJET76	527553	78	419 - 571	9830		L0747: 2, S0114: 1, H0318: 1, L0770: 1, L0658: 1 and L0790: 1.		
HBJET94	794343	79	33 - 167	9831		H0305: 2, H0402: 1, H0318: 1, L0761: 1 and H0445: 1.		
HBJEW15	507554	80	554 - 102	9832		S0140: 2 and H0318: 1. H0255: 1 and H0318: 1.		
HBJEZ09	573781	81	101 - 238	9833		Ser-1 to Ser-7, Pro-16 to Cys-21.		
HBJEZ16	421567	82	157 - 330	9834		Pro-1 to Asn-8.		
HBJEZ39	690479	83	3 - 155	9835		Pro-1 to Asn-8.		
HBJFC51	725818	84	22 - 216	9836		H0318: 1 and H0445: 1.		
HBJFJ53	573806	85	177 - 425	9837		S0116: 1 and H0318: 1.		
HBJFK55	625315	86	137 - 301	9838		H0318: 1 and H0318: 1.		
HBJFL49	573970	87	256 - 378	9839		H0318: 2 and L0748: 2.		
HBJFP58	738298	88	1 - 87	9840		H0318: 2		
						Lys-1 to Ser-9, Ser-20 to Pro-26.		



HBJFV07	953795	89	1 - 135	9841	Ala-12 to Lys-19.	H0318: 2	
HBJFV59	573747	90	167 - 280	9842	Pro-28 to Phe-38.	H0318: 2	
HBJFW10	878778	91	113 - 418	9843	Ala-59 to Val-65, Val-73 to Met-78.	H0318: 2	
HBJFW19	573765	92	143 - 352	9844		H0318: 2	
HBJFW20	573755	93	194 - 328	9845		H0318: 2	
HBJFW50	571351	94	3 - 200	9846		H0318: 2	
HBJFW55	526682	95	2 - 199	9847	Ala-1 to Phe-12.	H0318: 2	
HBJFW68	573766	96	103 - 186	9848	Gly-2 to Glu-7.	H0318: 2	
HBJFW78	571347	97	95 - 340	9849	Asn-4 to Cys-10.	H0318: 2	
HBJFX57	573760	98	2 - 106	9850		H0318: 2	
HBJFX81	529843	99	55 - 240	9851	Asp-41 to Gly-47.	H0318: 1 and H0264: 1.	
HBJFY40	574095	100	276 - 464	9852		H0318: 1 and H0271: 1.	
HBJFZ21	671191	101	1 - 150	9853	Asn-4 to Leu-10, Thr-14 to Ser-23.	H0318: 2	
HBJFZ40	526679	102	1 - 420	9854	Ala-86 to Ala-95.	H0318: 2	
HBJFZ56	507530	103	56 - 256	9855		H0318: 2	
HBJFZ82	799685	104	147 - 338	9856	Arg-16 to Pro-23.	H0318: 3	
HBJGR59	739095	105	10 - 198	9857	Ser-1 to Glu-7.	H0318: 1 and H0444: 1.	
HBJGT72	957668	106	15 - 341	9858	Gly-1 to Glu-7, Cys-16 to Ser-26, Pro-55 to Glu-60, Ala-62 to Ser-71, Ser-82 to Arg-88.	H0457: 2 and H0318: 1.	104170, 104170, 104170, 115470, 142360, 188400, 188400, 217095, 600850, 601607
HBJGT92	919507	107	275 - 490	9859	Lys-7 to Ser-18, Pro-32 to Glu-51.	AR089: 1, AR061: 1 H0318: 2, L0517: 2 and L0748: 1.	
HBJGU70	864063	108	199 - 375	9860	Pro-26 to Lys-31.	H0318: 1, H0436: 1 and S0308: 1.	
HBJGU78	920821	109	130 - 552	9861	Ser-26 to Lys-42, Glu-62 to Ser-68.	S0116: 1, H0318: 1 and L0769: 1.	
HBJGV17	662725	110	305 - 451	9862	Tyr-6 to Glu-12.	H0255: 1 and H0318: 1.	
HBJGV22	613781	111	3 - 128	9863	Lys-37 to Met-42.	H0318: 2	8p21 152760, 180100, 185430, 602629
HBJGV32	699075	112	100 - 243	9864	Asn-40 to Lys-48.	H0444: 2 and H0318: 1.	

HBHJG04	836184	113	81 - 317	9865	Glu-1 to Ser-7, Gln-55 to Arg-60.	H0318: 2
HBHJG76	970826	114	265 - 405	9866	Lys-1 to Cys-10.	H0318: 1 and H0436: 1.
HBHJH28	686278	115	2 - 118	9867	Lys-1 to Phe-16.	S0114: 1 and H0318: 1.
HBHJH44	621723	116	55 - 318	9868	Thr-30 to Asp-36, Ala-43 to His-49, Ile-79 to Thr-88.	L0745: 2, H0318: 1 and S0002: 1.
HBHJM50	724183	117	220 - 348	9869		H0318: 2
HBHJM57	973257	118	131 - 364	9870		H0318: 2
HBHJM76	715512	119	25 - 204	9871	Ile-53 to Gly-58.	S0114: 1 and H0318: 1.
HBHJN52	726570	120	118 - 288	9872		H0318: 2
HBHJO11	964943	121	283 - 534	9873	Met-41 to Gly-46, Ile-50 to Leu-56, Val-60 to Thr-68.	L0794: 3, S0114: 1, H0318: 1, L0769: 1, L0639: 1 and L0768: 1.
HBHJO60	975186	122	95 - 373	9874	Lys-17 to Gly-23.	H0318: 2
HBHJR56	686717	123	359 - 586	9875	Asn-28 to Trp-37.	S0114: 1 and H0318: 1.
HBHJT32	488736	124	203 - 334	9876		H0318: 2
HBHJV93	881606	125	162 - 353	9877		H0318: 1, H0521: 1 and L0600: 1.
HBHJX08	958970	126	423 - 590	9878		H0318: 2
HBHJZ03	923733	127	305 - 505	9879		S0114: 1, H0306: 1, H0402: 1 and H0318: 1.
HBHJZ08	958969	128	213 - 386	9880	Lys-14 to Thr-19, Trp-27 to Gly-33.	S0114: 1 and H0318: 1.
HBHJA19	920881	129	430 - 639	9881		H0318: 2 and L0777: 1.
HBHJA92	494812	130	189 - 326	9882		H0318: 1 and H0271: 1.
HBHJD21	670642	131	328 - 429	9883	Lys-24 to Gly-30.	H0318: 1, L0519: 1, H0436: 1 and L0752: 1.
HBHJD81	697594	132	6 - 212	9884	Gln-29 to Asn-35, Lys-56 to Pro-65.	H0305: 2, H0589: 1, H0318: 1 and L0766: 1.
HBHJL11	966701	133	248 - 427	9885		S0114: 1 and H0318: 1.
HBHJL31	847865	134	259 - 423	9886		H0318: 1 and H0421: 1.
HBHJL53	971136	135	258 - 473	9887		H0402: 1 and H0318: 1.
HBHJL75	698405	136	151 - 384	9888		H0318: 1 and H0272: 1.
HBHJL88	721859	137	223 - 360	9889		S0428: 2, H0318: 1 and

HBJIO70	725097	138	286 - 420	9890	Glu-9 to Asn-19.	S0052: 1.	
HBJIO79	774812	139	361 - 498	9891		H0318: 2	
HBJIY38	735365	140	156 - 344	9892		L0766: 2, H0318: 1, L0805: 1, L0776: 1 and H0543: 1.	
HBJIY20	669519	141	10 - 162	9893	Ala-1 to Ala-8.	H0318: 1 and S0002: 1.	
HBJIY86	725084	142	424 - 651	9894		AR061: 6, AR089: 2	
HBJJB02	919379	143	16 - 201	9895	Arg-1 to Arg-17.	H0318: 2	
HBJJB04	878974	144	1 - 264	9896		H0318: 1 and H0444: 1.	
HBJJB11	965016	145	30 - 266	9897	Ser-5 to Lys-11, Arg-19 to Gly-25, Ser-28 to Gly-33.	H0318: 2, L0766: 2 and L0599: 2.	
HBJJB15	659920	146	36 - 413	9898	Glu-12 to Gly-17, Pro-28 to Glu-40, Gln-47 to Arg-52.	H0318: 2	
HBJJB26	681342	147	34 - 147	9899	Gln-1 to Gln-12, Ser-25 to Pro-30.	H0318: 2	
HBJJB40	710873	148	2 - 157	9900	Ser-26 to Gly-35.	H0318: 2 and L0758: 2.	
HBJJB61	741615	149	1 - 309	9901	Cys-20 to Ser-27, Trp-34 to Gly-40.	H0318: 2	
HBJJB62	743096	150	114 - 284	9902	Ser-1 to Trp-7, Ile-18 to Ala-28, Pro-50 to Pro-57.	H0318: 2	
HBJJB74	765406	151	11 - 232	9903	Gly-1 to Trp-10, Arg-40 to Ala-50.	H0318: 2	
HBJJB78	489438	152	218 - 403	9904	Ser-14 to Thr-31, Val-35 to Gln-40, Leu-46 to Tyr-54.	H0318: 2	
HBJJD31	691780	153	81 - 362	9905	Pro-45 to Asp-50.	H0318: 2	
HBJJD90	712982	154	204 - 410	9906	Gln-6 to Gln-12, Tyr-14 to Lys-19, Gln-45 to Phe-50.	H0318: 2	
HBJH48	721473	155	127 - 306	9907		H0318: 2	
HBJUN13	915977	156	2 - 202	9908	Ser-32 to Gln-37.	H0318: 2	

HB1JQ29	666221	157	3 - 212	9909	Lys-51 to Asn-57. Gln-39 to Ser-47, Thr-55 to Phe-65.	H0318: 2		
HB1JS46	718894	158	3 - 230	9910		H0318: 2 and H0580: 1.		
HB1JU62	664298	159	256 - 429	9911	Ser-35 to Thr-40, Ser-48 to Asp-54.	H0318: 1 and S0002: 1.		
HB1JU81	671611	160	388 - 59	9912	Asp-47 to Phe-66, Ser-103 to Asn-110.	H0318: 1, L0764: 1 and S0053: 1.		
HB1JX04	949592	161	702 - 400	9913		L0761: 2, H0318: 1, H0581: 1 and L0800: 1.		
HB1JX11	847854	162	183 - 1	9914		H0318: 2		
HB1JX44	657242	163	100 - 264	9915		H0556: 1, S0116: 1, H0318: 1, H0591: 1, L0740: 1 and L0605: 1.		
HB1KA75	682230	164	102 - 218	9916		S0116: 1 and H0318: 1.		
HB1KC52	974123	165	102 - 284	9917	Pro-8 to Leu-15, Phe-26 to Gln-32.	H0318: 3		
HB1KC56	735812	166	53 - 301	9918	Leu-3 to Lys-10, Thr-15 to Leu-28.	H0318: 2, L0741: 1 and L0748: 1.		
HB1KC86	974121	167	360 - 518	9919		H0318: 3		
HB1KD68	676330	168	2 - 250	9920	Ser-8 to Cys-13.	H0254: 1 and H0318: 1.		
HB1KE63	744847	169	74 - 193	9921	Pro-1 to Lys-9, Asn-24 to Gln-32.	H0318: 1 and S0052: 1.		
HB1KF06	935033	170	118 - 315	9922		H0318: 2 and L0779: 1.		
HB1KF86	714449	171	1 - 267	9923		H0318: 1 and H0445: 1.		
HB1KJ26	489160	172	267 - 392	9924		H0318: 2 and L0749: 1.		
HB1LB78	588085	173	1 - 117	9925		H0318: 1 and H0542: 1.		
HB1LCS1	784830	174	113 - 661	9926		H0486: 2, L0598: 2, L0751: 2, L0758: 2, H0318: 1, L0794: 1, L0766: 1, L0804: 1, L0775: 1, L0663: 1 and H0445: 1.		
HB1LD57	683265	175	1 - 171	9927		H0318: 1, L0766: 1 and H0445: 1.		
HB1LD73	765356	176	147 - 347	9928	Lys-26 to Arg-34, Pro-43 to Asn-50.	H0318: 2		

HBIL182	735748	177	284 - 397	9929	Ser-39 to Lys-47.	H0318: 2	
HBILF58	864013	178	52 - 192	9930		H0318: 2	
HBIL107	952791	179	58 - 144	9931		H0318: 2	
HBIL113	656721	180	215 - 304	9932		H0318: 2	
HBIL118	665874	181	59 - 244	9933	Lys-1 to Thr-18, Trp-26 to Ser-32.	H0318: 2	
HBIL128	847840	182	44 - 223	9934	Lys-2 to Ile-8.	H0318: 2	
HBIL157	734522	183	3 - 116	9935		H0318: 2 and H0551: 1.	
HBIL168	752810	184	39 - 137	9936		H0318: 2	
HBILP14	657747	185	164 - 295	9937		H0318: 1 and H0264: 1.	
HBILR56	843811	186	189 - 719	9938	Gly-1 to Arg-14.	L0362: 3, H0318: 2, L0601: 2 and : 1.	113900, 126340, 126391, 130410, 134790, 138570, 160900, 173850, 191044, 258501, 600040, 600138, 602225, 602225
HBILR82	779004	187	1 - 366	9939	Ala-1 to Gln-6.	H0318: 2	2p23.3 176830, 176830, 182601, 229800, 602134
HBILV29	823400	188	1 - 387	9940	Gly-19 to Ser-28, Ser-33 to Thr-38.	H0318: 2	
HBIMA30	661665	189	2 - 274	9941	Ser-10 to Lys-17, Arg-44 to Val-72.	H0318: 2, L0766: 1 and L0748: 1.	
HBIMA51	725095	190	101 - 184	9942		H0318: 2	
HBIMC53	726491	191	167 - 310	9943		H0318: 1 and S0053: 1.	
HBIMD71	760155	192	328 - 459	9944		H0318: 2	
HBIMD74	975088	193	53 - 208	9945	Asp-1 to Pro-7.	H0318: 1 and H0581: 1.	
HBIME92	792110	194	32 - 190	9946	Arg-1 to Ser-8, Gln-22 to Asp-30, Ala-38 to Arg-43.	S0116: 1 and H0318: 1. H0318: 2	
HBIMF23	675692	195	29 - 202	9947	Gln-15 to Gly-20.	H0318: 2	
HBIMF30	691179	196	2 - 166	9948		H0318: 1 and H0521: 1.	
HBIMF47	720030	197	1 - 189	9949	Arg-17 to Ala-22.	H0318: 2	
HBIM176	720047	198	150 - 362	9950	Arg-22 to Lys-29, Leu-46 to Pro-53.	H0318: 2	

HBIMK34	935952	199	109 - 456	9951		H0318: 1, T0042: 1 and L0758: 1.
HBIMK94	794129	200	80 - 196	9952		L0745: 4, H0486: 1, H0318: 1, L0764: 1 and L0788: 1.
HBIML28	614911	201	271 - 420	9953		H0318: 2
HBIML69	864004	202	246 - 419	9954	Thr-18 to Trp-23.	S0114: 1, H0370: 1 and H0318: 1.
HBIMM72	760833	203	3 - 422	9955	Glu-15 to Ala-24.	L0804: 5, H0656: 3, H0318: 2, L0766: 2, S0114: 1, H0657: 1, H0625: 1, L0761: 1, L0803: 1, L0774: 1, L0655: 1 and H0542: 1.
HBIMM75	699060	204	202 - 366	9956	Ala-24 to Arg-30.	H0318: 3
HBIMQ86	576429	205	64 - 351	9957		H0255: 1, H0318: 1 and S0053: 1.
HBIMR15	964484	206	2 - 136	9958	Lys-37 to Val-43.	H0318: 1 and H0436: 1.
HBIMR60	740142	207	29 - 337	9959		H0318: 1 and H0444: 1.
HBIMT52	726480	208	2 - 163	9960		H0318: 1 and S0053: 1.
HBIMV72	952862	209	282 - 413	9961		H0318: 1 and H0444: 1.
HBIMW20	669030	210	158 - 319	9962	Pro-6 to Glu-19.	H0318: 2
HBIMX04	614930	211	128 - 352	9963	Glu-26 to Pro-36.	H0318: 1 and H0264: 1.
HBIMX21	933143	212	158 - 367	9964		H0318: 2
HBIMX29	690404	213	217 - 360	9965		H0318: 2
HBIMX34	703843	214	122 - 289	9966	Ala-30 to Arg-37.	H0318: 2
HBIMC11	966608	215	165 - 509	9967		H0318: 2
HBIMC89	786707	216	28 - 189	9968	Ala-1 to Pro-6, Pro-9 to Asp-21.	H0318: 2 and S0216: 1.
HBIMD59	576434	217	152 - 358	9969	Lys-36 to Cys-51, Glu-61 to Val-66.	S0053: 2 and H0318: 1.
HBIMBC18	578887	218	12 - 131	9970		H0421: 2
HBIMBC25	573103	219	1 - 171	9971	Ser-1 to His-11, Ser-43 to Trp-50.	S0116: 1 and H0421: 1.
HBIMBC35	921417	220	1 - 180	9972		S0116: 1 and H0421: 1.
HBIMBC91	506594	221	90 - 389	9973	Cys-20 to Asp-25.	L0748: 3, L0749: 2, S0116: 1 and H0421: 1.

HBMBE72	760737	222	37 - 426	9974	Trp-3 to Pro-10.	H0341: 1, H0421: 1, L0776: 1, L0789: 1, L0731: 1 and H0542: 1.	
HBMBE84	578869	223	63 - 338	9975	Arg-6 to Asn-13, Leu-58 to Leu-64.	H0421: 2	
HBMBH36	971172	224	96 - 260	9976		H0421: 5	
HBMBH55	732250	225	52 - 219	9977		H0421: 2	
HBMBH91	753141	226	2 - 211	9978	Ala-45 to Asp-50.	H0421: 3	
HBMBI06	935819	227	121 - 267	9979	Gly-19 to Asp-24.	H0421: 1 and H0423: 1.	
HBMBN32	775670	228	82 - 375	9980	Arg-1 to Asn-7.	H0318: 1 and H0421: 1.	
HBMBQ20	496513	229	154 - 372	9981	Pro-7 to Phe-14, Glu-46 to Val-53.	H0421: 2	
HBMBQ33	702457	230	134 - 421	9982	Ser-14 to Asn-19.	S0116: 1, H0421: 1 and L0748: 1.	
HBMBQ83	689705	231	93 - 218	9983	Leu-8 to Glu-25.	H0421: 2, L0777: 1 and L0731: 1.	
HBMB811	967111	232	154 - 315	9984	Arg-35 to Lys-41, Leu-47 to Ser-54.	H0421: 2	
HBMBT85	863938	233	112 - 312	9985		S0116: 1 and H0421: 1.	
HBMBU24	677240	234	1 - 192	9986	Met-25 to Glu-30, Leu-34 to His-40, Thr-46 to Lys-64.	H0421: 2 and S0116: 1.	
HBMBU38	531494	235	142 - 246	9987	Ser-7 to Ser-13.	S0116: 1, H0318: 1, H0421: 1 and S0002: 1.	
HBMBX69	698362	236	1 - 105	9988	Glu-9 to Cys-17.	S0116: 1 and H0421: 1.	
HBMBY27	574803	237	259 - 420	9989		S0116: 2 and H0421: 1.	
HBMBZ71	880580	238	2 - 565	9990	Pro-13 to Pro-18, Ala-25 to Val-31, Thr-71 to Ala-76, Gly-101 to Pro-117, Pro-130 to Arg-135.	L0752: 2, L0758: 2, H0421: 1, S0428: 1 and L0779: 1.	
HBMC444	716647	239	1 - 516	9991	Ala-15 to Glu-21, Ala-37 to Gly-45.	H0421: 1, H0090: 1, L0750: 1, L0777: 1 and L0758: 1.	
HBMC458	736084	240	103 - 282	9992	Glu-25 to Ala-34.	H0421: 2	
HBMC494	793174	241	316 - 432	9993		H0421: 2	
HBMCD26	847826	242	1 - 288	9994	Gly-85 to Arg-92.	S0116: 1, H0421: 1, S0426: 1	

HBMCDC49	723005	243					1 and L0655: 1.
HBMCCE22	674659	244	133 - 297	9995			H0421: 2
			92 - 274	9996			H0486: 1, H0421: 1, L0805: 1 and L0750: 1.
HBMCH75	932037	245	190 - 378	9997		Ser-9 to Lys-14.	H0421: 1 and H0576: 1.
HBMCH88	711318	246	162 - 251	9998		Leu-1 to Asn-10.	H0421: 2, S0134: 1 and H0423: 1.
HBMCK57	495736	247	425 - 237	9999		Gly-1 to Arg-8, Asp-17 to Cys-23, Phe-25 to Lys-33.	H0556: 1, H0421: 1 and H0090: 1.
	847828	9547	136 - 321	19299			
HBMCQ14	658484	248	25 - 204	10000		Glu-33 to Ala-40, Ser-44 to Arg-53.	H0421: 2
HBMCS34	703438	249	386 - 517	10001		Gly-17 to Gly-25.	
HBMCS77	465070	250	1 - 315	10002		Thr-38 to Ser-45, Pro-63 to Glu-70.	S0116: 1, H0421: 1, L0803: 1, L0790: 1 and L0754: 1.
HBMCT67	751643	251	1 - 165	10003			S0116: 1, H0421: 1 and L0748: 1.
HBMCU92	529580	252	96 - 221	10004		Glu-8 to Arg-15, His-28 to Tyr-34.	H0421: 2
HBMCZ11	967099	253	42 - 248	10005		Leu-15 to Asp-20, Arg-28 to Arg-35.	H0421: 1 and H0179: 1.
HBMCZ27	683436	254	99 - 344	10006			H0421: 2
HBMCZ32	835694	255	62 - 190	10007			S0116: 1 and H0421: 1.
HBMDA51	691116	256	270 - 434	10008			H0421: 2 and H0436: 2.
HBMDC03	924183	257	275 - 367	10009		Thr-2 to Tyr-11, Glu-64 to Ala-72.	H0421: 1 and H0445: 1.
HBMDC16	888206	258	1 - 360	10010			AR054: 1, AR050: 1
HBMDC88	750274	259	2 - 148	10011			H0421: 2
HBMDD36	861576	260	107 - 292	10012			S0116: 1 and H0421: 1.
HBMDDD59	739316	261	2 - 88	10013			S0116: 1, H0421: 1 and L0731: 1.
HBMDI9	657382	262	77 - 241	10014		Pro-41 to Asn-49.	H0421: 2, H0402: 1, L0749: 1 and H0444: 1.
HBMDI55	952830	263	8 - 358	10015			H0421: 1 and H0576: 1.



HBMDH79	805554	264	207 - 446	10016	Arg-1 to His-12.	H0486: 1 and H0421: 1.
HBMDJ11	967046	265	150 - 338	10017	His-23 to Lys-30.	H0421: 2
HBMDJ36	721673	266	116 - 202	10018	Phe-6 to Asn-13, Asp-20 to Tyr-29.	H0421: 2
HBMDK12	970684	267	106 - 360	10019	Phe-49 to Leu-55, Pro-63 to Asn-73.	H0421: 2
HBMDK13	657221	268	228 - 464	10020	Cys-3 to Pro-16.	H0556: 2, H0421: 1, S0426: 1 and L0748: 1.
HBMDL17	796050	269	64 - 267	10021		S0114: 1 and H0421: 1.
HBMDL64	746572	270	176 - 406	10022	Ala-3 to Trp-9.	H0402: 1 and H0421: 1.
HBMSB19	847800	271	126 - 266	10023		S0116: 2
HBMSK92	531156	272	1 - 126	10024		S0116: 2
HBMSO15	847795	273	1 - 141	10025		H0589: 2 and S0116: 1.
HBMSO39	531158	274	3 - 218	10026	Lys-21 to Ala-29.	S0116: 2
HBMTF79	544889	275	2 - 133	10027		S0116: 1 and H0264: 1.
HBMTG05	932497	276	8 - 160	10028		S0116: 2
HBMTM75	574515	277	2 - 310	10029	Pro-13 to Trp-18, Leu-1 to Glu-6, Glu-38 to Ala-48.	H0457: 2, S0116: 1 and H0576: 1.
HBMTTP84	703844	278	77 - 220	10030	Gly-1 to Pro-15, Lys-23 to Asp-34.	S0116: 2
HBMTU03	924979	279	69 - 188	10031		
HBMTW58	806670	280	399 - 593	10032		H0556: 1 and S0116: 1.
HBMTX29	689834	281	1 - 135	10033	Asp-1 to Asn-10.	S0116: 2
HBMTY84	537385	282	95 - 337	10034	Trp-56 to Cys-62.	S0116: 2
HBMTY82	523728	283	94 - 330	10035	Thr-35 to Ala-41.	H0264: 2 and S0116: 1.
HBMTA62	557828	284	135 - 344	10036	Ser-36 to Leu-41.	S0116: 1 and S0116: 1.
HBMTD12	574796	285	152 - 319	10037		S0116: 2
HBMTU60	740606	286	1 - 126	10038	Val-14 to Gly-33.	S0116: 1 and S0308: 1.
HBMTU57	735024	287	62 - 283	10039	Lys-1 to Ser-9.	S0116: 1 and H0271: 1.
HBMTU62	752244	288	9 - 341	10040		S0116: 2
HBMTJ84	531159	289	124 - 237	10041		S0116: 2
HBMTK59	712591	290	2 - 121	10042	Lys-32 to Arg-37.	S0114: 1 and S0116: 1.
HBMTU30	693337	291	83 - 217	10043		S0116: 1 and H0521: 1.
HBMTU010	953933	292	2 - 127	10044		S0116: 2
HBMTU012	417210	293	1 - 192	10045		S0116: 2

HBMU090	928078	294	2 - 265	10046	Asn-3 to Gln-9.	S0116: 1 and S0002: 1.
HBMU090	928078	294	2 - 265	10046	Asn-3 to Gln-9.	S0116: 2
HBMU090	928078	295	80 - 214	10047	Asn-18 to His-24.	
HBMU090	928078	296	299 - 111	10048	Phe-20 to Ser-29.	L0766: 2, L0747: 2, L0779: 2, L0777: 2, L0755: 2, H0583: 1, S0116: 1, L0800: 1, L0644: 1, L0626: 1, L0375: 1, L0776: 1, L0792: 1, L0663: 1, L0748: 1, L0758: 1, L0593: 1 and H0423: 1.
HBMU090	928078	297	63 - 386	10049	Ser-30 to Leu-38.	S0116: 1, H0457: 1 and H0444: 1.
HBMU090	928078	298	1 - 195	10050		S0116: 2
HBMU090	928078	299	76 - 216	10051		S0116: 2
HBMU090	928078	300	3 - 287	10052		S0116: 1 and H0264: 1.
HBMU090	928078	301	340 - 501	10053		S0116: 1, H0421: 1 and L0362: 1.
HBMU090	928078	302	143 - 3	10054	His-3 to Thr-9.	S0116: 1 and S0212: 1.
HBMU090	928078	303	55 - 183	10055		S0116: 2
HBMU090	928078	304	82 - 261	10056	Gln-52 to Tyr-60.	S0116: 1 and H0486: 1.
HBMU090	928078	305	57 - 215	10057	Ala-6 to Gln-11.	S0116: 1, H0264: 1, L0766: 1, L0803: 1, L0790: 1, L0749: 1 and L0731: 1.
HBMU090	928078	306	91 - 189	10058	Gln-1 to Gly-10.	S0218: 1 and S0116: 1.
HBMU090	928078	307	61 - 207	10059		S0116: 1, L0794: 1, L0766: 1 and H0543: 1.
HBMU090	928078	308	267 - 395	10060		S0116: 2
HBMU090	928078	309	3 - 218	10061	Gln-21 to Gly-26.	S0116: 1 and H0264: 1.
HBMU090	928078	310	110 - 214	10062		S0116: 2
HBMU090	928078	311	226 - 411	10063	Leu-2 to Gly-8.	S0116: 1 and H0264: 1.
HBMU090	928078	312	296 - 451	10064	Ser-6 to Asn-23.	S0116: 2
HBMU090	928078	313	152 - 322	10065		S0116: 1
HBMU090	928078	314	2 - 172	10066		S0116: 2
HBMU090	928078	315	144 - 293	10067	Ala-14 to Asp-46.	S0116: 1, H0255: 1 and L0744: 1.
HBMU090	928078	316	1 - 153	10068		S0116: 2

HBMXE31	573323	317	1 - 312	10069			S0116: 2
HBMXF47	573324	318	80 - 21	10070	Lys-1 to Ser-6.		S0116: 2
HBMXG08	959766	319	221 - 418	10071			S0116: 1 and H0521: 1.
HBMXH68	571361	320	1 - 186	10072	Glu-38 to Arg-44.		S0116: 1 and H0421: 1.
HBMXL10	968054	321	166 - 399	10073	Glu-20 to Asn-25.		S0116: 2
HBMXM65	925570	322	1 - 156	10074	Arg-1 to Arg-7, Gly-15 to Gly-20.		S0116: 3 and H0341: 1.
HBMXN39	705578	323	171 - 362	10075			S0116: 1 and H0271: 1.
HBMXN69	731274	324	159 - 314	10076	Pro-8 to Asn-16.		S0116: 2
HBMXO08	959768	325	3 - 185	10077	Ala-17 to Cys-27, Ala-29 to Glu-38.		S0116: 2
HBMXP90	574802	326	172 - 321	10078			S0116: 2, H0187: 1, L0748: 1, L0439: 1, L0747: 1 and L0757: 1.
HBMXR44	693123	327	84 - 230	10079			H0556: 1 and S0116: 1.
HBMXS38	706039	328	132 - 347	10080	Lys-32 to Asp-40.		S0116: 1, L0766: 1, L0664: 1 and H0445: 1.
HBMXU37	787155	329	32 - 148	10081	Leu-33 to Phe-39.		S0116: 1 and T0041: 1.
HBMXW13	657241	330	2 - 265	10082	Phe-20 to Val-26.		S0114: 1 and S0116: 1.
HBMXW73	764440	331	188 - 337	10083	Ala-1 to Gly-10, Phe-34 to Glu-42.		L0599: 2, S0116: 1, L0769: 1 and H0521: 1.
HBTAEO7	953607	332	24 - 263	10084	Leu-7 to Gly-12, Leu-23 to Cys-28, Thr-34 to Ala-58.		S0180: 1, S0052: 1 and L0599: 1.
HBVAG42	676856	333	3 - 362	10085			H0486: 1 and S0182: 1.
HBVAA17	924209	334	3 - 152	10086	Ser-34 to Cys-44.		S3016: 2 and S0053: 1.
HBVAB40	463488	335	92 - 319	10087	Ser-23 to Trp-31.		S3016: 1 and H0422: 1.
HCFAA38	576731	336	84 - 422	10088	Ser-1 to Gly-10, Arg-15 to Gly-20, Pro-71 to Lys-79.		H0422: 2
HCFAC84	869259	337	391 - 570	10089	Asn-53 to Thr-60.		H0556: 1 and H0422: 1.
HCFAT63	689719	338	156 - 266	10090			H0445: 1 and H0422: 1.
HCFAT85	728254	339	155 - 346	10091	Leu-6 to Gln-12, Ser-53 to Lys-64.		S0053: 1 and H0422: 1.
HCFAL41	576064	340	141 - 302	10092	Gly-8 to Leu-13,		H0543: 1 and H0422: 1.

HCFAU74	576069	341	23 - 136	10093	Asp-32 to Lys-40.	H0422: 2		
HCFAV46	924086	342	92 - 262	10094	Ile-27 to Lys-33, Thr-40 to Ser-45.	H0305: 2, H0402: 1, L0748: 1 and H0422: 1.		
HCFAW03	924532	343	3 - 188	10095	Asp-1 to Arg-13.	L0738: 1, H0521: 1 and H0422: 1.		
HCFAZ27	784950	344	1 - 201	10096	Val-12 to Cys-22, Ala-42 to Ala-48.	S0216: 1, L0748: 1, L0749: 1 and H0422: 1.		
HCFAZ33	576058	345	36 - 146	10097		H0422: 2		
HCFAZ96	853961	346	2 - 148	10098	Arg-1 to Pro-13.	H0422: 2	11	
HCFAZ14	658542	347	59 - 190	10099	Ala-1 to Leu-8, Glu-12 to Arg-17.	H0656: 1, L0592: 1 and H0422: 1.		
HCFAZ91	850449	348	3 - 155	10100		H0422: 2		
HCFAZ07	953506	349	1 - 99	10101	Ile-2 to Lys-11.			
HCFAZ82	870890	350	161 - 526	10102	Gly-1 to Gly-6, Thr-20 to Trp-25, Met-30 to Phe-35, Cys-63 to Gly-68, Pro-73 to Gly-93.	H0585: 17, H0141: 7, L0804: 4, H0641: 2, L0769: 2, L0800: 2, L0803: 2, L0809: 2, L0731: 2, L0763: 1, L0761: 1, L0773: 1, L0789: 1, L0747: 1, L0777: 1 and H0422: 1.		
HCFAZ39	576018	351	89 - 343	10103	Ser-25 to Thr-31.	H0422: 2		
HCFAZ80	576669	352	2 - 241	10104	Pro-1 to Val-18.	H0063: 1 and H0422: 1.		
HCFAZ08	959617	353	46 - 225	10105	Ser-16 to Tyr-39, Pro-42 to Gly-48.	H0220: 1 and H0422: 1.		
HCFAZ62	576126	354	40 - 372	10106	Ser-23 to Lys-29.	H0255: 1, H0436: 1, H0576: 1 and H0422: 1.		
HCFAZ39	835926	355	111 - 281	10107	Leu-12 to Met-23.	H0422: 2		
HCFAZ076	577218	356	47 - 223	10108	Lys-42 to Asp-53.	S0053: 1 and H0422: 1.		
HCFAZ92	576864	357	266 - 472	10109	Glu-29 to Thr-40, Glu-42 to Gly-51.	H0423: 1 and H0422: 1.		
HCFAZ925	828076	358	3 - 170	10110		H0556: 1 and H0422: 1.	11	
HCFAZ573	506244	359	207 - 401	10111	Ile-7 to Arg-17, Ser-33 to Thr-45.	H0422: 2		
HCFAZ001	916703	360	265 - 495	10112	Thr-1 to Glu-10, Phe-19 to Lys-35.	S0114: 2, H0402: 1 and H0422: 1.		

HCFCU38	707620	361	183 - 287	10113	(Gly-18 to Ser-29.	H0422: 2	
HCFCU84	573546	362	349 - 459	10114		H0341: 2 and H0422: 1.	
HCFCU85	576010	363	1 - 267	10115		H0422: 2	
HCFCW13	828042	364	253 - 447	10116		H0422: 2	7q21-q22
							116860, 126650, 126650, 129900, 133170, 154276, 173360, 173360, 602136, 602136, 602136, 602447
HCFCY02	920340	365	218 - 385	10117	Val-1 to Lys-9.	S0426: 1, L0659: 1, L0731: 1 and H0422: 1.	
HCFC A31	725700	366	44 - 388	10118		L0748: 1, H0543: 1 and H0422: 1.	
HCFCB67	751764	367	61 - 297	10119		H0445: 1 and H0422: 1.	
HCFC C37	577375	368	2 - 268	10120		L0805: 3, H0264: 1, L0629: 1 and H0422: 1.	
HCFC C68	753089	369	1 - 171	10121	Tyr-20 to Lys-27.	H0576: 1 and H0422: 1.	
HCFC C94	670538	370	3 - 146	10122	Asp-1 to Gly-6, Leu-31 to Ala-38, Pro-40 to Arg-45.	H0589: 1 and H0422: 1.	
HCFC D44	883973	371	102 - 410	10123	Pro-15 to Val-20, Pro-22 to Lys-32.	H0305: 2 and H0422: 1.	
HCFC F47	894415	372	2 - 298	10124	Arg-1 to Glu-8.	AR089: 14, AR061: 7 H0341: 1 and H0422: 1.	
HCFC H47	720400	373	140 - 268	10125		S0134: 1 and H0422: 1.	
HCFC J21	671028	374	72 - 191	10126	Leu-17 to Lys-40.	AR089: 0, AR061: 0 H0422: 2	
HCFC M12	970835	375	386 - 670	10127	Glu-6 to Ala-13, Ser-15 to Ser-20.	L0748: 1, L0439: 1, H0445: 1 and H0422: 1.	
HCFC N66	850422	376	116 - 256	10128		H0422: 2	
HCFC N81	576871	377	146 - 481	10129		H0341: 1, L0439: 1, L0590: 1 and H0422: 1.	
HCFC P14	577277	378	1 - 111	10130		S0114: 1 and H0422: 1.	
HCFC P31	764750	379	63 - 443	10131	Glu-30 to Lys-36, Gly-59 to Leu-65.	H0090: 2, H0486: 1, L0766: 1, L0743: 1, L0751: 1, L0777: 1 and H0422: 1.	

HCFLC76	862682	380	2 - 247	10132	Arg-1 to Thr-6.	S0114: 2 and H0422: 1.	
HCFLC73	575988	381	110 - 256	10133	Leu-22 to Asn-27.	H0422: 2	
HCFLD13	576709	382	79 - 297	10134	Ser-49 to Thr-54.	S0052: 1 and H0422: 1.	
HCFLD48	720938	383	90 - 236	10135	Cys-14 to Arg-22, Lys-25 to Cys-33.	H0444: 1 and H0422: 1.	
HCFLD10	961270	384	156 - 332	10136		H0650: 1 and H0422: 1.	
HCFLD19	671507	385	283 - 564	10137		H0271: 1, L0731: 1 and H0422: 1.	
HCFLD79	575996	386	196 - 327	10138	Thr-15 to Asn-23, Ile-29 to Lys-39.	H0422: 2	
HCFLC28	968304	387	139 - 357	10139	Ile-1 to Ala-8, Ala-47 to Glu-52, Gln-64 to Asp-69.	H0264: 1 and H0423: 1.	
HCFLD28	850564	388	131 - 448	10140	Ile-2 to Lys-7, Pro-13 to Ser-24, Ser-37 to Gln-45, His-55 to Pro-64, Thr-74 to Gln-81.	H0423: 2, S0114: 1, L0790: 1 and H0436: 1.	
HCFLD78	773685	389	422 - 616	10141	Phe-10 to Ser-17, Gly-31 to Ser-42.	L0749: 3, L0743: 2, L0758: 2, H0318: 1, L0770: 1, L0806: 1, L0744: 1, L0748: 1, L0751: 1, L0747: 1, L0777: 1 and H0423: 1.	
HCFLB44	576679	390	63 - 260	10142	Gln-47 to Ala-53.	S0052: 1, H0444: 1 and H0423: 1.	
HCFLB95	945122	391	2 - 277	10143	Pro-1 to Ser-27.	S0344: 1 and H0423: 1.	15q26.1
HCFLP96	579039	392	2 - 130	10144	Ser-2 to Lys-16.	H0305: 1 and H0423: 1.	166800, 210900
HCFLG84	711243	393	140 - 400	10145	Gly-1 to Ser-10, Pro-18 to Phe-29.	H0255: 1 and H0423: 1.	
HCFLI49	722269	394	236 - 538	10146		H0250: 1, T0042: 1 and H0423: 1.	
HCFLI40	576068	395	228 - 338	10147		H0423: 2	
HCFLP31	698139	396	85 - 222	10148		S0053: 1 and H0423: 1.	
HCFLR55	576043	397	58 - 255	10149		H0423: 2	
HCFLR83	576034	398	150 - 269	10150		H0423: 2 and H0436: 1.	
HCFLT42	576040	399	1 - 171	10151	Tyr-8 to Gln-14,	H0423: 2 and L0766: 1.	

HCFLU12	970849	400	154 - 474	10152	Ser-25 to Asp-31.	H0543: 1 and H0423: 1.	
HCFLW58	964870	401	301 - 444	10153	Thr-38 to Val-45.	L0002: 1, H0063: 1, L0594: 1 and H0423: 1.	
HCFCM42	670519	402	2 - 196	10154	Pro-3 to Ser-8.	H0589: 1, S0426: 1 and H0423: 1.	
HCFCMD15	975075	403	214 - 441	10155	Ala-13 to Glu-19.	H0556: 2 and H0423: 1.	
HCFCMD23	676003	404	2 - 208	10156	Gly-1 to Ser-15, Pro-36 to Glu-58.	S0344: 1 and H0423: 1.	
HCFCME27	576815	405	76 - 318	10157	Pro-16 to Arg-33, Cys-68 to Gly-74.	S0053: 1 and H0423: 1.	
HCFCMF47	973243	406	192 - 374	10158	Arg-54 to Lys-61.	H0436: 2 and H0423: 1.	
HCFCMF64	773342	407	1 - 687	10159	His-4 to Asn-14, Ser-59 to Lys-75, Arg-77 to Leu-83, Cys-86 to Trp-93, Glu-103 to Leu-117, Glu-123 to Arg-136, Glu-143 to Glu-153.	H0583: 3, H0543: 2, H0650: 1, T0041: 1 and H0423: 1.	114208, 114208, 119300, 120620, 120620, 120920, 134370, 134370, 134370, 134580, 145260, 150310, 150310, 179820, 191045, 600105, 600759, 601494, 601975
HCFCMG14	576063	408	3 - 368	10160	Asp-1 to Arg-9.	H0423: 2	
HCFCMH12	970843	409	254 - 403	10161	Asn-16 to Glu-21.	H0423: 2	
HCFCMJ70	576096	410	208 - 354	10162		L0532: 1, H0436: 1 and H0423: 1.	
HCFCMK25	576081	411	75 - 167	10163	Asn-1 to Asn-8.	H0423: 2	
HCFCMK27	576094	412	161 - 292	10164	Leu-31 to Leu-37.	H0423: 2	
HCFCMK49	576098	413	3 - 422	10165		H0423: 2	
HCFCMK62	576097	414	2 - 241	10166	Arg-1 to Leu-10, Phe-27 to Phe-32, Glu-39 to Ser-45.	H0423: 2	
HCFCMK63	506251	415	1 - 216	10167		H0423: 2	
HCFCML42	576667	416	311 - 415	10168		S0134: 1 and H0423: 1.	
HCFCMM81	506250	417	85 - 222	10169		H0423: 2	
HCFCMN07	953522	418	2 - 139	10170	Lys-37 to Val-43.	H0306: 1 and H0423: 1.	

HCFO64	805822	419	267 - 575	10171		S0278: 1, L0439: 1 and H0423: 1.	
HCFO62	954213	420	283 - 573	10172		H0254: 2, S0114: 1 and H0423: 1.	
HCFOY85	933017	421	94 - 312	10173	Thr-26 to Gly-33.	H0090: 1 and H0423: 1.	
HCFOZ17	664132	422	1 - 198	10174	Ala-6 to Asp-17, Arg-61 to Trp-66.	H0416: 1 and H0423: 1.	9431.1
HCFOA30	772262	423	1 - 141	10175	Gly-1 to Arg-16.	H0423: 2 and H0445: 1.	223900, 253800,
HCFOB62	576446	424	58 - 255	10176	Pro-27 to Trp-34, Gln-55 to Ala-62.	H0423: 2	253800
HCFOK43	973548	425	119 - 514	10177	Lys-1 to Gln-6, Arg-59 to Phe-66.	H0423: 2	
HCFOO55	576008	426	150 - 362	10178	Gln-32 to Arg-37.	H0423: 2	
HCFOQ04	615351	427	681 - 896	10179		S0144: 1, L0605: 1 and H0423: 1.	
HCFOB11	967196	428	65 - 130	10180		H0423: 2, L0766: 1 and H0521: 1.	
HCFOE38	576005	429	102 - 263	10181		H0423: 2 and H0581: 1.	
HCFOF90	561625	430	207 - 356	10182		H0423: 2, H0069: 1 and L0662: 1.	
HCFOG82	576007	431	64 - 180	10183	Lys-10 to Thr-15, Tyr-18 to Thr-23.	H0423: 2	
HCFOH56	577114	432	116 - 262	10184	Tyr-9 to Met-15, Gln-17 to Ser-22, Pro-43 to Ala-49.	H0423: 2 and L0748: 1.	
HCFOI11	967195	433	28 - 216	10185	Lys-19 to Lys-26.	S0052: 1 and H0423: 1.	
HCFOI96	796104	434	24 - 203	10186	Pro-25 to Gly-33.	H0444: 1 and H0423: 1.	
HCFOO18	575965	435	221 - 394	10187		H0423: 2	
HCFOF42	460824	436	299 - 159	10188	Gln-1 to Gly-14, Arg-38 to Ala-43.	H0477: 1 and H0423: 1.	
HCFOF46	862556	9548	257 - 439	19300	Ser-8 to Ile-13.		
HCFOA60	927654	437	39 - 134	10189		H0423: 2	
HCFOA60	670941	438	4 - 66	10190		H0306: 1 and H0402: 1.	
HCFOA58	738408	439	1 - 180	10191		H0583: 1 and H0306: 1.	
HCFOA70	959686	440	2 - 181	10192		H0402: 2 and H0306: 1.	



HCUAG89	706427	441	236 - 394	10193	Pro-15 to Val-29.	H0306: 2		
HCUAG92	504395	442	1 - 129	10194	Glu-1 to Thr-7.	H0306: 1 and H0057: 1.		
HCUAH15	916651	443	1 - 168	10195		H0306: 1 and H0402: 1.	2q11-q12	129490, 167415, 176947, 600334
HCUAH60	916621	444	1 - 153	10196	Glu-16 to Glu-21, Arg-31 to Leu-39.	H0306: 1 and H0402: 1.		
HCUAH70	574164	445	80 - 265	10197	Lys-6 to Gly-22.	H0306: 2		
HCUAH71	959492	446	169 - 312	10198		H0402: 2 and H0306: 1.		
HCUAK23	676289	447	57 - 185	10199	His-29 to Gly-34.	H0306: 1 and H0305: 1.		
HCUAK49	574256	448	155 - 292	10200	Thr-1 to Tyr-8, Thr-11 to Trp-16.	H0306: 2		
HCUAL07	953876	449	2 - 373	10201	Pro-12 to Arg-18, Gly-20 to Ala-35, Ala-44 to Ala-60, Gly-78 to Ser-84.	H0306: 1, H0402: 1, L0769: 1 and L0780: 1.		
HCUAM57	574375	450	143 - 274	10202		H0306: 2		
HCUAM95	727174	451	1 - 141	10203	Glu-37 to Asp-45.	S0114: 1 and H0306: 1.		
HCUAN44	574154	452	3 - 188	10204	Pro-6 to Trp-16.	H0306: 1 and S0053: 1.		
HCUAN49	577897	453	67 - 136	10205	Lys-7 to Val-12.	L0766: 3, H0556: 1, H0306: 1, H0264: 1, L0779: 1 and L0599: 1.		
HCUAN72	850140	454	3 - 143	10206	Val-20 to Tyr-26.	H0306: 1, H0087: 1 and S0216: 1.		
HCUAO03	924902	455	78 - 299	10207		H0306: 1, H0402: 1 and L0367: 1.		
HCUAO28	850062	456	189 - 347	10208	Leu-19 to Gly-28.	H0306: 1, H0402: 1 and L0599: 1.		
HCUAQ92	506688	457	184 - 291	10209	Pro-8 to Ser-14.	H0306: 2		
HCUAR07	953872	458	57 - 140	10210		H0306: 1 and H0402: 1.		
HCUAT07	953869	459	14 - 424	10211		H0306: 2 and L0599: 1.		
HCUAU02	920694	460	3 - 152	10212	Ser-14 to Trp-20.	H0306: 2		
HCUAU16	574193	461	28 - 135	10213		H0306: 2		
HCUAX57	934633	462	153 - 308	10214		H0306: 1, S0052: 1, S0216: 1, L0438: 1 and L0779: 1.		
HCUBB28	685493	463	81 - 239	10215		H0306: 1 and H0402: 1.		

HCUBB46	577238	464	142 - 282	10216	Lys-15 to Gly-23.	H0402: 2 and H0306: 1.	
HCUBE26	810522	465	1 - 111	10217		H0306: 2	
HCUBE27	574097	466	96 - 344	10218	Pro-42 to Ala-50, Pro-52 to Phe-59.	H0306: 2	
HCUBE55	574203	467	3 - 284	10219	Phe-17 to Arg-28, His-59 to Gln-78.	H0306: 2	
HCUBG79	781681	468	41 - 190	10220	Asn-5 to Asp-21, Ser-44 to Lys-50.	H0306: 2	
HCUBG83	537501	469	20 - 151	10221	Ile-21 to Gly-27.	H0265: 1 and H0306: 1.	
HCUBH45	575720	470	53 - 133	10222	Arg-14 to Lys-27.	H0306: 1 and H0402: 1.	
HCUBI13	862161	471	83 - 226	10223		H0306: 2, H0402: 1, S0053: 1 and L0748: 1.	
HCUBI14	574199	472	14 - 112	10224	Thr-15 to Thr-31.	H0306: 2	
HCUBI15	881192	473	77 - 343	10225	Val-29 to Leu-43.	H0306: 3	
HCUBI38	792415	474	206 - 502	10226	Gly-1 to Gly-17, Pro-20 to Ala-28, Pro-31 to Leu-44.	H0306: 2	
HCUBI43	685512	475	40 - 129	10227	Ala-5 to Cys-14.	H0306: 2	
HCUBI49	961748	476	27 - 95	10228		H0306: 2 and H0657: 1.	
HCUBI74	574235	477	44 - 256	10229	Pro-5 to Gln-20, Gln-30 to Arg-35, Arg-43 to Arg-52.	H0306: 2	
HCUBJ11	967484	478	3 - 272	10230	Arg-1 to Leu-8, Ile-12 to Pro-18, Gln-27 to Trp-39, Gly-66 to Ala-72.	H0306: 1 and H0402: 1.	
HCUBJ42	574265	479	89 - 250	10231	Gln-12 to Gln-20.	H0306: 2	
HCUBK01	917257	480	272 - 421	10232	His-3 to Ala-10, Leu-13 to Arg-18, Gln-20 to Gly-25.	H0306: 2	
HCUBK36	850132	481	107 - 475	10233	Pro-29 to Ser-34.	H0306: 1 and H0576: 1.	
HCUBK39	577234	482	262 - 504	10234	Arg-32 to Leu-38.	H0306: 1 and H0402: 1.	
HCUBK46	574120	483	143 - 298	10235		H0306: 2	
HCUBK49	574122	484	70 - 378	10236	Arg-17 to Asp-23, Cys-44 to His-50, Ile-72 to Gln-86.	H0306: 2	

HCUB12	739021	485	2 - 211	10237	Leu-91 to Lys-96.	H0305: 2, H0306: 1 and H0389: 1.
HCUB165	574201	486	80 - 310	10238	Ala-1 to Ser-10. Leu-39 to Glu-54. His-6 to Thr-13, Pro-23 to Gly-36, Pro-38 to Ser-46. Leu-1 to Arg-8.	H0306: 2
HCUBM86	577291	487	1 - 180	10239		H0306: 1 and S0140: 1.
HCUBN07	953879	488	26 - 118	10240		H0306: 2, H0305: 1 and L0783: 1.
HCUBN21	577287	489	103 - 345	10241	Gly-10 to Arg-17.	H0306: 1 and H0402: 1.
HCUBN38	971421	490	29 - 184	10242	Arg-1 to Cys-7, Val-44 to Lys-52.	H0306: 1 and H0402: 1.
HCUBN66	664536	491	1 - 147	10243	Asp-29 to Ser-40.	H0306: 1 and S0140: 1.
HCUBO08	959928	492	37 - 219	10244		H0306: 1 and H0402: 1.
HCUBP69	526757	493	64 - 147	10245	Leu-12 to Pro-28.	H0306: 2
HCUBP89	850016	494	52 - 318	10246	Thr-72 to Cys-78.	H0306: 1 and H0402: 1.
HCUBQ76	575352	495	71 - 166	10247		H0306: 1 and H0305: 1.
HCUBQ85	967074	496	1 - 219	10248	Ile-11 to Ala-18, Ser-41 to Arg-48.	H0306: 4, H0402: 2 and S0052: 1.
HCUBS58	522378	497	308 - 180	10249	Phe-4 to Cys-9, Asn-32 to Ser-42.	H0306: 1, L0622: 1 and H0057: 1.
HCUBS72	577286	498	50 - 199	10250	Asn-26 to Gly-38.	H0306: 1 and H0402: 1.
HCUBT02	920682	499	131 - 283	10251		H0306: 2
HCUBT94	574239	500	295 - 540	10252	Glu-18 to Phe-28, Pro-37 to Asn-42, Ser-49 to Cys-59.	H0402: 2, L0748: 2, H0306: 1, S0002: 1, L0749: 1 and L0755: 1.
HCUBV04	615547	501	31 - 159	10253	Lys-31 to Asn-37.	H0306: 1 and H0402: 1.
HCUBX57	506518	502	133 - 360	10254	Pro-32 to Leu-39.	H0306: 1 and H0402: 1.
HCUBZ57	529702	503	144 - 335	10255		H0306: 2
HCUBZ86	694720	504	2 - 160	10256		H0306: 1 and H0402: 1.
HCUBZ88	574096	505	158 - 310	10257	Pro-33 to Asp-41, Pro-43 to Lys-51.	H0306: 2, H0402: 1, L0768: 1 and L0758: 1.
HCUBZ96	506585	506	3 - 305	10258	Arg-1 to Asn-7, Pro-39 to Gly-52.	H0306: 1 and S0052: 1.
HCUCB20	574189	507	171 - 374	10259	Thr-11 to Gly-18.	H0306: 2

HCUC020	573901	508	127 - 288	10260	Glu-31 to Cys-39.	H0306: 2		
HCUC078	57129	509	29 - 304	10261		H0306: 1 and H0402: 1.		
HCUC096	796530	510	2 - 241	10262	Gly-10 to Ala-15, Val-46 to Val-51, Thr-70 to Lys-77.	H0306: 1 and H0402: 1.		
HCUCD26	574098	511	2 - 175	10263	Glu-10 to Thr-15, Ala-29 to Ile-47.	H0306: 2		
HCUCD82	780047	512	151 - 297	10264	Glu-9 to Arg-14.	H0306: 2		
HCUCG21	671210	513	93 - 386	10265	Pro-12 to Ser-19.	H0306: 1 and H0416: 1.		
HCUC43	715488	514	19 - 171	10266	Gly-12 to Gly-28.	S0052: 2 and H0306: 1.	1p33-p34	120260, 130500, 133200, 138140, 168360, 171760, 171760, 176100, 176100, 178300, 230000, 246450, 255800
HCUCJ90	967501	515	17 - 79	10267		H0306: 2		
HCUCT08	959910	516	2 - 286	10268		H0306: 1 and S0216: 1.		
HCUCT48	720905	517	128 - 259	10269	Glu-16 to Cys-24.	H0306: 2		
HCUCV13	574121	518	3 - 143	10270	Glu-1 to Trp-9.	H0306: 2		
HCUCV20	694398	519	264 - 67	10271		H0402: 2 and H0306: 1.		
HCUDA38	862089	520	96 - 356	10272		H0402: 2		
HCUDB13	578712	521	70 - 177	10273	Leu-1 to Cys-7, Leu-19 to Thr-28.	H0402: 2 and L0771: 1.		
HCUDC45	576566	522	128 - 361	10274	Pro-14 to Gly-22.	H0402: 2		
HCUDC79	576577	523	21 - 155	10275	Ser-38 to Leu-43.	H0402: 2		
HCUDD19	959706	524	149 - 583	10276	Glu-1 to Arg-9.	H0402: 2		
HCUDD43	850103	525	2 - 199	10277		H0402: 2		
HCUIDD57	734883	526	77 - 385	10278	Arg-10 to Arg-20, Gly-26 to Trp-32, Ser-51 to Gly-56, Pro-68 to Ser-77.	H0402: 2 and L0748: 1.		
HCUDE23	953868	527	16 - 138	10279	Glu-7 to Asp-17.	H0402: 3, H0306: 1, L0717: 1 and L0754: 1.		
HCUDE38	850076	528	3 - 266	10280	His-1 to Trp-8, Pro-43 to Ala-48.	H0402: 2		

HCUDF47	861150	529	389 - 802	10281	Leu-71 to Phe-76. Phe-13 to Ala-30, Thr-40 to Lys-45, Ser-57 to Pro-73, Lys-121 to Cys-138.	L0742: 7, L0439: 4, L0777: 2, H0341: 1, H0402: 1, H0439: 1, L0641: 1, L0803: 1, L0789: 1, S0216: 1 and L0741: 1.		
HCUDF26	676949	530	121 - 282	10282	Gly-23 to Val-29, (Gln-32 to Asn-39, Ile-31 to Gly-41.	H0402: 1 and H0318: 1.		
HCUDF33	577224	531	176 - 307	10283		L0748: 2, L0749: 2, H0306: 1 and H0402: 1.		
HCUDF90	958449	532	2 - 214	10284	Ser-13 to Ile-18.	H0402: 1, H0305: 1 and H0589: 1.		
HCUDH64	717894	533	1 - 405	10285	Lys-1 to Arg-11, Ala-34 to Arg-66, Gly-72 to Gly-79.	H0402: 2		
HCUDH84	713524	534	30 - 269	10286	Ala-8 to Gly-13, Gly-32 to Gly-38.	H0402: 1 and H0444: 1.		
HCUDJ91	861025	535	77 - 316	10287	Gln-5 to Ile-15, Ala-24 to Val-30.	H0402: 2 and H0179: 1.		
HCUDL94	915821	536	2 - 367	10288		H0457: 2, H0402: 1, L0766: 1 and L0659: 1.		
HCUDM23	462283	537	59 - 298	10289	Val-70 to Leu-75.	H0402: 1 and S0052: 1.		
HCUDM66	506522	538	209 - 379	10290		H0306: 1 and H0402: 1.		
HCUDN09	850101	539	466 - 353	10291		H0402: 2, H0139: 1, H0486: 1 and L0789: 1.		
HCUDN14	862119	540	181 - 414	10292		H0402: 2		
HCUDP19	578721	541	167 - 358	10293	Met-9 to Lys-34.	H0402: 2		
HCUDP23	783051	542	141 - 458	10294	Lys-27 to Arg-32.	H0402: 2		
HCUDP27	725155	543	101 - 331	10295		H0306: 1 and H0402: 1.		
HCUDP82	578720	544	1 - 351	10296		H0402: 2		
HCUDQ61	839959	545	124 - 330	10297	Glu-25 to Lys-41.	H0402: 2		
HCUDS61	578705	546	2 - 262	10298	Lys-81 to Arg-87.	H0402: 2 and L0177: 1.		
HCUDT62	747131	547	66 - 302	10299		H0402: 2		
HCUDT65	915742	548	1 - 1857	10300		AR089: 1, AR061: 0 H0402: 1, L0017: 1, H0635: 1 and L0492: 1.		

HCUDW37	859268	549	497 - 297	10301	Thr-1 to Lys-11.	H0402: 1 and S0002: 1.	
HCUDW74	576240	550	244 - 116	10302	Lys-1 to Trp-6, Glu-23 to Cys-32, Pro-35 to Pro-43.	H0402: 2	
HCUDX05	951165	551	1 - 51	10303		H0402: 1 and H0305: 1.	
HCUDX14	571370	552	83 - 319	10304		S0114: 1 and H0402: 1.	
HCUDZ25	678365	553	98 - 307	10305	Arg-6 to Arg-12, Ala-42 to Lys-70.	H0402: 2	
HCUEA58	579029	554	96 - 317	10306	Glu-1 to Gly-6, Pro-26 to Cys-39.	H0306: 1, H0402: 1 and H0416: 1.	
HCUEA63	745183	555	103 - 234	10307	Arg-14 to Glu-26, Leu-36 to Glu-42.	H0402: 2	
HCUEA72	713040	556	1 - 255	10308	Gly-1 to Gly-6, Val-41 to Pro-46.	H0402: 2 and L0648: 1.	
HCUEB62	579058	557	3 - 287	10309	Thr-81 to Trp-91.	H0306: 1 and H0402: 1.	
HCUEC06	935769	558	107 - 3	10310		H0402: 2	
HCUEC78	850066	559	19 - 195	10311	Pro-10 to Asp-21, Cys-45 to Thr-51.	H0402: 2	
HCUED04	615410	560	67 - 330	10312	Cys-7 to Arg-18, Lys-34 to Ser-43, Pro-48 to Ile-55.	H0402: 2	
HCUED66	576573	561	37 - 324	10313	Ser-11 to Lys-17, Arg-19 to Thr-29.	H0402: 2	
HCUEE04	653118	562	1 - 303	10314		H0402: 2	
HCUEE29	578709	563	36 - 206	10315		H0402: 2	
HCUEE41	578715	564	3 - 221	10316	Phe-1 to Trp-10.	H0402: 2	
HCUEE63	745184	565	3 - 113	10317	His-1 to Arg-12, Gly-25 to Thr-37.	H0402: 2	
HCUEE66	578702	566	47 - 211	10318		H0402: 2	
HCUEE83	578703	567	1 - 171	10319	Gly-1 to Lys-11.	H0402: 2	
HCUEF90	578714	568	2 - 148	10320	His-7 to Pro-25.	H0402: 2	
HCUEG38	784414	569	23 - 127	10321	Pro-7 to Asn-25.	H0402: 2	
HCUEG90	578745	570	20 - 115	10322		H0402: 3	
HCUEJ55	959552	571	19 - 111	10323		H0402: 2	
HCUEJ69	757657	572	122 - 400	10324		H0402: 1 and H0271: 1.	

HCUEK37	964869	573	135 - 344	10325	Ser-9 to Trp-15, Gln-22 to Tyr-35, Lys-41 to Gly-51.	H0402: 3	
HCUEI28	706456	574	101 - 232	10326	Ala-1 to Arg-29.	H0306: 1 and H0402: 1.	
HCUEI91	576568	575	2 - 118	10327	Glu-1 to Tyr-8.	H0402: 2 and L0667: 1.	
HCUEM23	576379	576	138 - 386	10328	Pro-48 to Ala-69.	H0402: 2	
HCUEM35	861545	577	86 - 319	10329	Phe-5 to Ala-10.	H0402: 2	
HCUEM62	576575	578	1 - 195	10330	Gly-58 to Ser-65.	H0402: 2	
HCUEM34	706452	579	20 - 247	10331	Pro-10 to Arg-15.	H0402: 2	
HCUEM58	738225	580	221 - 436	10332	Arg-19 to Ile-30.	H0402: 1 and S0002: 1.	
HCUEO17	932118	581	99 - 242	10333		H0402: 4	
HCUEO30	769203	582	2 - 262	10334		H0402: 2	
HCUEO31	576551	583	55 - 171	10335		H0402: 2	
HCUEO41	576524	584	3 - 461	10336	His-1 to Ser-7, Pro-29 to Gln-34, Lys-64 to Pro-76, Glu-83 to Asn-99, Glu-101 to Arg-109.	H0402: 2	
HCUEO62	578713	585	271 - 399	10337	Gly-18 to Arg-28.	H0402: 2	
HCUEO79	850090	586	3 - 167	10338	Pro-30 to Arg-35.	H0306: 1, H0402: 1, L0623: 1 and S0052: 1.	
HCUEP01	913675	587	215 - 406	10339	Met-47 to Gly-58.	S0052: 2, H0341: 1, H0402: 1 and S0428: 1.	
HCUEQ37	881486	588	81 - 362	10340	Gln-13 to Arg-34.	H0402: 3, H0306: 1 and H0486: 1.	
HCUEQ56	751410	589	3 - 137	10341	His-1 to Gly-7, Gly-21 to Gly-29.	H0402: 1, L0776: 1, S0428: 1 and H0445: 1.	
HCUES29	579033	590	107 - 229	10342		H0402: 5, H0486: 2 and H0306: 1.	
HCUES34	850096	591	57 - 230	10343	Thr-43 to Lys-58.	H0402: 3	
HCUES93	576498	592	54 - 356	10344	Gly-22 to Leu-27.	H0402: 2	
HCUEU13	657258	593	3 - 173	10345	Asp-37 to Leu-42, Pro-44 to Pro-56.	L0749: 3, H0402: 2, L0761: 2, L0803: 1 and L0790: 1.	
HCUEU27	506339	594	3 - 158	10346		H0306: 1 and H0402: 1.	
HCUEU10	964857	595	1 - 105	10347		H0306: 1 and H0402: 1.	

HCUEU20	970780	596	58 - 255	10348	Glu-25 to Gly-36, Asp-39 to Ser-64.	H0402: 3	
HCUEV08	959670	597	198 - 353	10349	Gln-3 to Ser-9.	H0402: 2	
HCUEV17	905316	598	801 - 1223	10350	Lys-43 to Ser-51.	AR051: 9, AR050: 2, AR054: 1	
HCUEV65	750364	599	1 - 168	10351		H0402: 2 and H0306: 1.	
HCUEV82	881370	600	55 - 237	10352		H0306: 1 and H0402: 1.	
HCUEW19	576513	601	3 - 221	10353	His-1 to Thr-7, Pro-9 to Gly-14, Cys-49 to Gly-54, Val-63 to Trp-70.	H0402: 2	
HCUEW58	850061	602	159 - 407	10354	Lys-8 to Gly-16, Ser-70 to Pro-76.	H0402: 2	
HCUEW71	881372	603	95 - 211	10355		H0306: 1, H0402: 1 and H0370: 1.	
HCUEX58	462365	604	1 - 201	10356		H0402: 2	
HCUEX74	953897	605	160 - 318	10357	Lys-26 to Leu-35.	H0402: 2	
HCUEY29	920419	606	232 - 390	10358	Glu-25 to Ala-32.	H0402: 3	
HCUEY48	576519	607	3 - 233	10359	Ser-34 to Gly-39.	H0402: 2	
HCUEZ88	576537	608	185 - 340	10360	Val-6 to Arg-14, Lys-25 to Pro-31.	H0402: 2	
HCUFA05	932116	609	135 - 329	10361		H0402: 2	
HCUFA38	675677	610	2 - 184	10362		S0298: 1, H0402: 1, L0520: 4q25 1 and L0758: 1.	137600, 189800, 217030, 248510, 600919, 601542
HCUFBI5	660460	611	75 - 269	10363	Asp-10 to Tyr-18, Ile-53 to Arg-65.	H0402: 3	
HCUFB89	746601	612	69 - 200	10364		H0402: 2	
HCUFC22	951134	613	1 - 171	10365		AR050: 53, AR051: 51, AR054: 51, AR061: 2, AR089: 1	
HCUFDO9	625728	614	3 - 215	10366		H0402: 2	
HCUFG64	576574	615	2 - 91	10367		H0402: 2, H0306: 1 and L0748: 1.	



HCUFH32	920281	616	55 - 240	10368	Met-23 to Glu-30, Leu-46 to Glu-51.	H0402: 2	
HCUFK94	722999	617	2 - 187	10369	Ala-1 to Gly-6, Pro-27 to Gly-41, Gly-44 to Arg-49, Gly-53 to Lys-62.	H0402: 2	
HCUFL02	932429	618	3 - 425	10370	Thr-24 to His-29, Ala-31 to Ala-36, Pro-40 to Gly-53, Phe-132 to Glu-137.	H0402: 2	
HCUFL15	575844	619	3 - 365	10371		H0402: 2	
HCUFL35	677853	620	102 - 287	10372	Lys-1 to Trp-9, Glu-12 to Trp-19, Lys-27 to Glu-32, Gln-54 to Lys-62.	H0402: 1, L0521: 1, L0792: 1 and H0576: 1.	
HCUFL77	575843	621	2 - 184	10373	Glu-10 to Ala-15, Ser-24 to Asn-36.	H0402: 2	
HCUFM60	730707	622	153 - 446	10374	Arg-6 to His-12, Pro-15 to Ser-25, Pro-28 to Leu-34, Ala-50 to Glu-56.	H0402: 2	
HCUFM65	576809	623	365 - 466	10375	Lys-1 to Thr-8, Arg-23 to Gly-31.	H0402: 2 and L0743: 1.	
HCUFN65	741927	624	2 - 460	10376		L0745: 3 and H0402: 2.	
HCUFP13	576582	625	1 - 198	10377	Gly-1 to Gly-6, Trp-32 to Thr-39, Leu-46 to Ser-57.	H0402: 2	
HCUFP76	861703	626	146 - 289	10378		H0306: 1 and H0402: 1.	
HCUFP91	575864	627	2 - 67	10379		H0402: 2	
HCUFQ80	709357	628	323 - 469	10380	Arg-14 to Ser-29, Lys-18 to Phe-27,	S0114: 1 and H0402: 1.	
HCUFT26	575721	629	36 - 329	10381	Arg-39 to Glu-47.	H0306: 1 and H0402: 1.	
HCUFU36	575831	630	1 - 165	10382	Arg-50 to Leu-55.	H0402: 2	
HCUFU49	953896	631	43 - 204	10383		H0402: 2	
HCUFU58	725891	632	429 - 223	10384	Ser-19 to Ser-25, Glu-46 to Ile-56.	L0596: 2, H0402: 1 and H0179: 1.	

HCUFU68	694410	633	161 - 325	10385	Ser-29 to Ser-38.	H0402: 3 and H0543: 1.	
HCUFU91	828083	634	2 - 226	10386		H0402: 2 and H0306: 1.	
HCUFV13	578459	635	260 - 370	10387		H0402: 1 and H0090: 1.	
HCUFV44	576650	636	65 - 265	10388	Leu-1 to Arg-20, Arg-55 to Tyr-61.	S0134: 1, H0402: 1 and L0665: 1.	
HCUFW41	850007	637	3 - 155	10389		H0402: 2, H0306: 1, L0659: 1 and L0599: 1.	
HCUFW61	862086	638	3 - 230	10390		H0402: 1 and H0576: 1.	
HCUFW75	575830	639	137 - 319	10391	Ser-7 to Trp-13, Arg-33 to Ala-38, Pro-40 to Ile-53.	H0402: 2	
HCUFW83	577263	640	164 - 415	10392		H0306: 1 and H0402: 1.	
HCUFX24	577266	641	3 - 188	10393	Ser-18 to Asn-33.	S0114: 1, H0402: 1, H0305: 1 and L0791: 1.	
HCUFX74	850067	642	296 - 60	10394	Gly-1 to Ser-6.	H0306: 1, H0402: 1 and S0216: 1.	
HCUFY27	669876	643	3 - 125	10395		H0306: 1 and H0402: 1.	
HCUFY35	577130	644	3 - 176	10396	His-1 to Ser-9, Pro-29 to His-36, Ser-46 to Cys-51.	H0306: 1 and H0402: 1.	
HCUFY40	967273	645	18 - 206	10397		H0402: 2	
HCUFZ81	878882	646	31 - 360	10398	Glu-27 to Thr-35.	H0402: 2	
HCUGB48	880730	647	173 - 361	10399		H0402: 1 and H0436: 1.	
HCUGC96	575825	648	302 - 478	10400		L0754: 2, H0341: 1 and H0402: 1.	
HCUGD15	660343	649	90 - 257	10401		L0599: 3 and H0402: 2.	
HCUGF18	666495	650	188 - 322	10402	Val-29 to Arg-35.	H0402: 2	
HCUGF61	741842	651	284 - 394	10403	Tyr-13 to Arg-19, Ser-26 to Phe-32.	H0306: 1 and H0402: 1.	
HCUGG25	678112	652	31 - 177	10404	Ala-27 to Lys-32.	H0402: 2	
HCUGH01	916600	653	180 - 329	10405	Trp-1 to Gly-7, Pro-28 to Ser-49.	H0402: 2 and L0748: 1.	
HCUGH30	778735	654	124 - 285	10406		L0749: 2, H0402: 1, L0740: 1 and H0423: 1.	
HCUGH34	706469	655	3 - 197	10407	Pro-1 to Gly-7, Ser-12 to Phe-20.	H0306: 1 and H0402: 1.	

HCUGH83	862078	656	82 - 186	10408	Val-15 to Arg-27.	H0306: 1 and H0402: 1.	
HCUGI29	584711	657	74 - 259	10409		H0402: 4, H0436: 1, L0748: 1 and L0749: 1.	
HCUGI54	715310	658	45 - 167	10410		H0402: 2	
HCUGI35	850046	659	1 - 234	10411	Pro-18 to Ser-24.	H0402: 2	
HCUGK10	850035	660	103 - 360	10412	Pro-46 to Ser-51.	H0306: 1 and H0402: 1.	
HCUGK91	790218	661	3 - 149	10413		H0402: 1 and H0305: 1.	
HCUGL14	658467	662	151 - 255	10414		H0402: 2	
HCUGL84	496491	663	85 - 318	10415	Asn-6 to Gln-13.	H0402: 2	
HCUGM08	959488	664	1 - 321	10416	Asp-33 to Gly-38.		
HCUGN12	970727	665	6 - 131	10417	Ser-27 to Gly-34.	H0402: 2	
					Asn-13 to Gly-20.	L0749: 3 and H0402: 2.	
HCUGO02	920154	666	160 - 354	10418	Arg-29 to Asn-34.		
					Leu-7 to Leu-13.	H0402: 2	
					Cys-20 to His-27.		
					Leu-32 to Arg-37.		
HCUGP83	850029	667	1 - 159	10419		H0254: 1 and H0402: 1.	
HCUGQ16	917269	668	139 - 357	10420		H0306: 2 and H0402: 1.	
HCUGQ18	666474	669	134 - 316	10421	Pro-11 to Gly-16.	H0306: 1 and H0402: 1.	
HCUGR38	706471	670	3 - 317	10422	Ser-2 to His-7.	AR089: 1, AR061: 0	
					Pro-14 to Leu-20.	H0402: 1 and H0305: 1.	
					Ala-33 to Gly-38.		
HCUGR82	916538	671	296 - 439	10423	Tyr-6 to Trp-13.	H0402: 3 and L0529: 1.	
HCUGT92	692730	672	43 - 255	10424	Ile-1 to His-8.	H0402: 2	
					His-11 to Asn-20.		
					Pro-40 to Lys-50.		
HCUGU46	666815	673	120 - 212	10425		H0306: 1 and H0402: 1.	
HCUGV38	850032	674	2 - 175	10426		H0402: 2	
HCUGV60	496443	675	20 - 238	10427	Pro-19 to Gln-39.	H0306: 1 and H0402: 1.	
					Glu-48 to Gln-58.		
HCUGW04	960596	676	64 - 270	10428	Glu-1 to Gly-8.	H0402: 2	
HCUGY26	953550	677	290 - 454	10429	Lys-15 to Lys-29.	L0748: 3, H0402: 2, H0075: 1 and H0439: 1.	
HCUGZ15	792418	678	193 - 369	10430		H0402: 1 and H0444: 1.	
HCUHA63	745094	679	75 - 239	10431		H0402: 1 and H0318: 1.	

HCUIA74	576850	680	288 - 446	10432	Val-15 to Ala-21, Lys-32 to Gly-38.	H0305: 2, H0589: 2 and H0402: 1.	
HCUIB30	850018	681	81 - 245	10433		H0306: 1, H0402: 1, L0556: 1, L0532: 1 and L0756: 1.	
HCUIHC25	920830	682	1 - 228	10434	Leu-10 to Arg-26.	S0114: 1 and H0402: 1.	
HCUIHC41	712343	683	1 - 366	10435	Gly-9 to Gly-15.	H0306: 1 and H0402: 1.	
HCUIHC45	671212	684	129 - 323	10436	Pro-28 to Gln-34, Ser-42 to Ile-57.	H0306: 1 and H0402: 1.	
HCUIHC69	693007	685	26 - 139	10437	Asn-1 to Gln-7.	H0306: 2 and H0402: 1.	
HCUIHD50	650854	686	264 - 410	10438		H0402: 2	
HCUIHD55	705384	687	91 - 390	10439	Ala-6 to Phe-19, Arg-37 to Trp-47, Ser-64 to Gly-72, His-79 to Arg-100.	H0341: 1, H0402: 1 and S0053: 1.	
HCUIHE23	675910	688	1 - 297	10440	Gly-1 to Gln-6, Thr-54 to Gly-65.	H0306: 1 and H0402: 1.	
HCUIHE31	693311	689	196 - 354	10441		H0306: 1, H0402: 1 and H0305: 1.	
HCUIHE43	754187	690	60 - 272	10442		H0306: 1 and H0402: 1.	
HCUIHE48	835917	691	57 - 329	10443		L0662: 2, S0114: 1, H0402: 1 and L0766: 1.	
HCUIHE76	666599	692	98 - 253	10444		H0402: 2	
HCUIHF12	970685	693	240 - 446	10445	Gly-14 to Arg-22, Gln-35 to Ala-41.	H0306: 1 and H0402: 1.	
HCUIHF41	878528	694	223 - 459	10446	Pro-25 to Glu-30, Leu-71 to Gln-79.	AR051: 37, AR054: 25, AR050: 23	
HCUIHI14	658452	695	48 - 209	10447	Gln-29 to Ile-36.	H0306: 1 and H0402: 1. L0764: 1.	
HCUIH34	923803	696	184 - 516	10448	Gln-1 to His-13, Met-18 to His-24.	H0402: 1 and H0486: 1.	
HCUIH54	720378	697	63 - 242	10449	Gln-4 to Arg-17.	H0402: 2	
HCUIHJ2	970782	698	1 - 219	10450	Pro-13 to Ser-22.	H0402: 2	
HCUIHJ15	577304	699	3 - 416	10451	Leu-10 to Trp-18, Pro-31 to Gln-36, Asp-46 to Thr-57.	H0306: 1 and H0402: 1.	

HCUH130	966583	700	132 - 431	10452	Arg-26 to Ile-31, His-34 to Lys-39, Phe-47 to Arg-54.	H0402: 1, H0580: 1 and H0488: 1.	
HCUH138	575796	701	138 - 364	10453	Pro-32 to Arg-37.	H0402: 2	
HCUH144	615198	702	2 - 109	10454	Lys-1 to Pro-26.	H0402: 2	
HCUH161	576561	703	37 - 327	10455	Ile-3 to Arg-10, Gly-59 to Lys-69.	H0402: 2	
HCUH194	736095	704	93 - 263	10456	Lys-1 to Gly-8.	H0402: 2	
HCUH060	576563	705	3 - 272	10457	Ser-1 to Gly-14, Val-17 to Pro-31, Lys-39 to Thr-45, Ser-51 to Glu-56, Ala-72 to Trp-85.	H0402: 2	
HCUHP20	669737	706	53 - 196	10458	Ser-4 to His-16.	H0402: 2 and L0601: 1.	
HCUHQ13	575803	707	133 - 318	10459	Lys-43 to Tyr-53.	H0402: 2	
HCUHQ33	575800	708	3 - 353	10460	Ser-89 to Arg-95.	H0402: 2	
HCUHQ37	850010	709	76 - 270	10461	Leu-42 to Glu-55.	H0341: 1, H0402: 1 and L0748: 1.	
HCUHQ74	765638	710	30 - 311	10462	Gly-7 to Arg-13, Gly-33 to His-39, Gly-46 to Val-51, Pro-75 to Lys-90.	H0402: 1 and H0444: 1.	
HCUHS19	566809	711	48 - 200	10463	Leu-9 to Ser-17.	AR054: 29, AR051: 24, AR050: 13 H0402: 2, H0306: 1, L0659: 1 and L0599: 1.	
HCUHS60	850009	712	29 - 190	10464	Pro-1 to Gly-13.	H0306: 1 and H0402: 1.	
HCUHT21	572665	713	61 - 135	10465	Leu-31 to Leu-37.	H0306: 1 and H0402: 1.	
HCUHT36	722649	714	110 - 379	10466	Pro-39 to Val-60, Arg-80 to Glu-90.	H0402: 1 and H0445: 1.	
HCUHU68	577795	715	225 - 1	10467	Lys-1 to Asp-7, Lys-48 to Ser-54.	H0254: 1 and H0402: 1.	
HCUHW54	730716	716	1 - 114	10468	Gly-1 to Thr-11, Thr-24 to Pro-31.	H0402: 2	

HCUIHW59	739329	717	2 - 178	10469		H0402: 3	
HCUIHY49	577887	718	17 - 226	10470		H0306: 1 and H0402: 1.	
HCUIA48	721719	719	2 - 124	10471	Lys-27 to Leu-40.	H0306: 1 and H0402: 1.	
HCUIJ35	713818	720	339 - 482	10472	Glu-1 to Leu-12.	S0052: 2 and H0402: 1.	
HCUIL80	577172	721	71 - 3	10473	Cys-11 to Gly-20.	H0306: 1 and H0402: 1.	
HCUIM51	725724	722	3 - 290	10474		H0306: 1 and H0402: 1.	
HCUII18	666537	723	1 - 195	10475	Phe-11 to Ser-17, Pro-45 to Ala-53.	H0306: 1 and H0402: 1.	
HCUIO82	883812	724	149 - 337	10476	Gly-10 to Arg-15.	H0306: 1 and H0402: 1.	
HCIVAC18	889480	725	88 - 192	10477		AR050: 9, AR054: 5, AR051: 0 H0300: 2	
HCWAA20	669991	726	3 - 83	10478	Gln-1 to Lys-10.	H0305: 2	
HCWAB01	921689	727	90 - 218	10479		H0305: 3	
HCWAB44	669714	728	183 - 326	10480	Asp-1 to Lys-17.	H0305: 2	
HCWAB50	724684	729	79 - 153	10481	Phe-18 to Val-24.	H0556: 1, H0305: 1 and S0002: 1.	
HCWAB56	507283	730	17 - 157	10482		H0305: 2	
HCWAB67	529658	731	53 - 124	10483		H0305: 2	
HCWAB80	959937	732	1 - 153	10484		H0305: 2	
HCWAB92	523447	733	43 - 159	10485	Ser-1 to Thr-6, Tyr-22 to Thr-27.	H0305: 2	
HCWAC68	529653	734	2 - 205	10486	Gly-1 to Ser-18, Gly-30 to Thr-38.	H0305: 3	
HCWAE16	660280	735	1 - 168	10487	Val-11 to Arg-18, Arg-49 to Arg-56.	H0305: 2	
HCWAE50	665130	736	132 - 224	10488	Tyr-1 to Lys-14.	H0305: 3	
HCWAF02	920993	737	101 - 391	10489	Pro-1 to Gln-8.	H0305: 2, H0589: 1 and S0428: 1.	
HCWAF45	723452	738	2 - 148	10490	Arg-1 to His-10, Ile-22 to Lys-27.	H0305: 2 and L0774: 1.	
HCWAF60	523354	739	56 - 268	10491		H0305: 2	
HCWAF80	529498	740	2 - 223	10492	Ala-9 to Gln-15.	H0305: 2	
HCWAG20	839796	741	91 - 228	10493	Ser-36 to Arg-46.	H0305: 2 and H0589: 2.	
HCWAG70	529357	742	61 - 321	10494	Gln-1 to Gly-6.	H0305: 2 and H0589: 1.	

HCWAH52	574929	743	24 - 221	10495		Thr-20 to Ser-29, Lys-46 to Arg-59.	
HCWA193	523536	744	3 - 335	10496			H0305: 2
HCWAJ55	529361	745	1 - 81	10497		Leu-20 to Gly-29, Thr-36 to Ser-43.	H0305: 2 and H0264: 1.
HCWAJ58	740987	746	213 - 365	10498		Pro-10 to Arg-20.	H0305: 2
HCWAK51	751640	747	133 - 309	10499		Ser-4 to His-12.	H0305: 2
HCWAK80	702435	748	187 - 483	10500			H0305: 2
HCWAL14	861938	749	79 - 345	10501		Thr-21 to Ser-34, Tyr-46 to Phe-54.	S0114: 2, H0305: 2 and H0589: 1.
HCWAL22	579046	750	83 - 481	10502		Arg-3 to Asp-9, Pro-39 to Asp-45, Pro-63 to Gly-71, Tyr-78 to Trp-91.	H0305: 2
HCWAL39	861893	751	55 - 315	10503		Lys-11 to Ser-21, Gln-26 to Asp-35, Gln-58 to Gln-66.	H0305: 2 and H0402: 1 and H0305: 1.
HCWAM08	960170	752	43 - 108	10504		Lys-12 to Gly-22.	H0305: 4 and S0052: 1.
HCWAM39	529349	753	1 - 183	10505			H0305: 2 and H0589: 2.
HCWAM49	849980	754	145 - 507	10506			H0305: 1 and S0052: 1.
HCWAN17	966646	755	333 - 133	10507		Phe-11 to Trp-17, Gln-33 to Val-46, Trp-48 to Leu-56.	H0305: 6 and H0589: 1.
HCWAN55	928116	756	57 - 389	10508		Pro-7 to Gly-13, Gly-41 to Asp-46.	H0402: 3, H0305: 2, S0114: 1 and H0589: 1.
HCWAP63	523259	757	182 - 400	10509		Gln-22 to Ala-29.	H0305: 11
HCWAP66	889439	758	40 - 168	10510		Gln-18 to Ser-23.	H0305: 3
HCWAR05	932623	759	2 - 373	10511		Gln-9 to Lys-15, Pro-89 to Arg-100.	AR050: 2, AR051: 1
HCWAR59	916461	760	2 - 391	10512		Gln-2 to Trp-18, Pro-46 to Val-64, Arg-70 to Arg-85, Asp-90 to Gln-102, Glu-115 to Gly-123.	H0305: 2
HCWARG3	523255	761	187 - 357	10513		Gly-11 to His-19.	H0305: 7 and H0589: 1.

HCWAR76	529652	762	283 - 301	10514	Gln-36 to Gln-44.	H0305: 3 and H0589: 2.	
HCWAR84	529741	763	54 - 212	10515	Tyr-12 to Thr-17.	H0305: 2	
HCWAT16	523125	764	151 - 315	10516		H0305: 3	
HCWAT59	529236	765	1 - 243	10517	Gly-4 to Ala-10, Gln-22 to Ser-29, Gln-35 to Ser-41, Ala-56 to Gly-71.	H0305: 4 and H0589: 1.	
HCWAU26	849902	766	103 - 276	10518	Pro-9 to Gly-15.	H0305: 6	
HCWAU89	589836	767	87 - 293	10519	Ala-1 to Pro-14, Pro-21 to Tyr-29, Phe-38 to Leu-69.	H0305: 3 and H0589: 1.	
HCWAV75	849976	768	45 - 203	10520	Lys-8 to His-16.	H0305: 2	
HCWAY41	542388	769	137 - 328	10521	Arg-7 to Pro-12, Gly-28 to Lys-38.	H0305: 9	
HCWAZ16	529227	770	166 - 342	10522	Ser-17 to Tyr-22.	H0305: 2	
HCWAZ43	849892	771	68 - 289	10523	Val-28 to Arg-38.	H0305: 5 and H0589: 1.	
HCWAZ66	523243	772	176 - 409	10524		H0305: 2	
HCWAZ73	523299	773	51 - 296	10525	Thr-22 to Thr-27.	H0305: 3	
HCWAZ91	529226	774	1 - 396	10526	Asp-30 to Asp-35.	H0305: 2 and H0589: 1.	
HCWBA18	529224	775	61 - 135	10527		H0305: 2	
HCWBA21	937631	776	88 - 276	10528	Phe-15 to Ser-21, Lys-50 to Asn-63.	H0305: 2 and L0361: 1.	
HCWBA49	723359	777	29 - 184	10529	Ser-16 to Phe-24.	H0305: 4 and L0794: 2.	
HCWBA50	835532	778	1 - 183	10530		H0305: 6	
HCWBA55	529222	779	11 - 301	10531	Lys-1 to Cys-15.	H0305: 3 and H0589: 1.	
HCWBA64	715579	780	90 - 278	10532	Gln-1 to Gly-12.	H0305: 4	
HCWBB27	967045	781	87 - 299	10533	Lys-1 to Ser-6.	H0305: 2	
HCWBB63	667283	782	3 - 323	10534	Arg-3 to Ser-9, Asp-29 to Ser-34.	AR061: 0, AR089: 0	
HCWBC16	529350	783	1 - 222	10535	Gly-33 to Pro-41.	H0305: 3	
HCWBC28	584778	784	3 - 278	10536	Glu-1 to Asn-23.	H0305: 2	
HCWBC32	574909	785	202 - 333	10537		H0305: 2	
HCWBC54	573188	786	10 - 108	10538		H0305: 2	
HCWBC61	728666	787	87 - 239	10539		H0305: 2	



HCWBC69	849971	788	1 - 126	10540	His-26 to Thr-31, Gly-36 to Tyr-42.	H0305: 2	
HCWBC71	784052	789	1 - 48	10541		H0305: 2	
HCWBC81	849974	790	1 - 261	10542		H0305: 2	
HCWBD54	706513	791	18 - 251	10543	Tyr-10 to Ile-16.	H0305: 3	
HCWBE25	529216	792	1 - 141	10544		H0305: 2	
HCWBE37	542403	793	42 - 320	10545		H0305: 4 and H0589: 1.	
HCWBE49	932196	794	220 - 420	10546		H0305: 8	
HCWBE51	782317	795	220 - 411	10547	Gly-10 to Gly-17.	H0305: 2 and H0589: 2.	
HCWBE58	773587	796	2 - 175	10548	Gln-12 to Ser-17.	H0305: 2	
HCWBE69	723717	797	27 - 242	10549		H0305: 2, S0114: 1 and L0752: 1.	
HCWBE71	688011	798	295 - 405	10550		H0305: 5	
HCWBE76	968515	799	1 - 171	10551	Thr-2 to Arg-56.	H0305: 2	
HCWBG06	954670	800	1 - 72	10552		H0305: 2	
HCWBG30	920530	801	2 - 301	10553	Ala-1 to Arg-8, Lys-25 to Thr-30, His-52 to Gln-37, Arg-46 to Ser-59, His-65 to Trp-71, Arg-76 to Arg-82.	H0305: 3	
HCWBG40	676588	802	270 - 473	10554	Lys-1 to Arg-6.	H0305: 2 and H0589: 1.	
HCWBG41	839014	803	95 - 280	10555	Arg-25 to Ser-34, Gly-40 to Ser-45.	H0305: 4	
HCWBG43	689743	804	42 - 167	10556	Arg-34 to Pro-41.	H0305: 3	
HCWBG77	529229	805	115 - 288	10557	Pro-13 to Lys-23.	H0305: 3	
HCWBG91	789318	806	3 - 83	10558		H0305: 2	
HCWB117	954153	807	149 - 3	10559	Ser-17 to Asn-27.	H0305: 3	
HCWB124	529211	808	1 - 126	10560		H0305: 2	
HCWB137	967717	809	3 - 209	10561	Trp-10 to Gly-17, Pro-42 to Asp-48, Asp-57 to Asp-67.	H0305: 3 and H0589: 1.	
HCWB153	934909	810	105 - 305	10562	Arg-1 to Ser-13, Pro-25 to Pro-31.	H0305: 5 and H0589: 2.	
HCWB177	529238	811	32 - 229	10563	His-39 to Pro-46.	H0305: 2	

HCWB090	921653	812	2 - 355	10564	Cys-58 to Trp-66.	H0305: 3 and H0589: 1.
HCWB02	917300	813	14 - 283	10565	Lys-12 to Glu-22, Thr-49 to Thr-55.	H0305: 3
HCWB127	784524	814	3 - 140	10566	Arg-8 to Asn-15, Ser-17 to Ser-25, Glu-28 to Leu-34, Pro-52 to Val-65.	H0305: 4
HCWB161	849567	815	42 - 269	10567		H0305: 6
HCWB166	529228	816	2 - 100	10568	Arg-18 to Leu-27.	H0305: 2
HCWB175	935579	817	245 - 421	10569	Ser-1 to Arg-6, Leu-13 to Glu-26.	H0306: 1, H0402: 1, H0305: 1, L0605: 1 and H0543: 1.
HCWB181	849977	818	2 - 124	10570	Ser-23 to Asn-28.	H0305: 2
HCWB186	719521	819	38 - 157	10571		H0305: 3
HCWB138	935481	820	136 - 261	10572	Tyr-3 to Ser-10.	H0305: 2
HCWB141	666457	821	2 - 151	10573	Leu-48 to Leu-53.	H0305: 2 and H0589: 1.
HCWB04	861842	822	133 - 342	10574	Glu-10 to Lys-22.	H0305: 2
HCWB05	577712	823	200 - 355	10575	Gly-1 to Asn-6.	H0305: 5 and H0589: 1.
HCWB095	849932	824	56 - 268	10576		H0305: 5
HCWB06	924638	825	2 - 373	10577		H0305: 6
HCWB010	842038	826	104 - 244	10578	His-2 to Pro-9, Glu-10 to Gly-22, Leu-26 to Ala-35, Pro-52 to Ala-59, Ser-68 to Leu-74.	H0305: 2
HCWB023	964590	827	2 - 148	10579		H0305: 2
HCWB094	574861	828	87 - 344	10580		H0305: 2
HCWB027	684336	829	166 - 318	10581	Cys-3 to Asp-17, Leu-19 to Ala-27.	H0589: 2 and H0305: 1.
HCWB056	733662	830	1 - 204	10582	Ala-35 to Ser-40.	H0305: 2
HCWB070	757467	831	117 - 338	10583	Tyr-22 to Trp-28.	H0305: 1 and H0589: 1.
HCWB074	765881	832	87 - 200	10584		H0305: 3
HCWB085	849969	833	3 - 371	10585	Ser-54 to His-61.	H0305: 12, H0589: 1 and L0369: 1.
HCWB003	920886	834	3 - 311	10586		H0305: 5
HCWB036	557873	835	22 - 222	10587	Leu-53 to Pro-67.	H0305: 2

HCWBQ70	706526	836	1 - 387	10588	Asp-6 to Phe-11, Ile-31 to Phe-37, Arg-82 to His-87, Glu-95 to Gln-101, Gln-6 to Gly-12.	H0589: 2 and H0305: 1.
HCWBQ74	526537	837	43 - 201	10589		H0305: 2
HCWBQ88	527694	838	53 - 172	10590		H0305: 2
HCWBQ86	527692	839	1 - 210	10591		H0305: 3 and L0777: 1.
HCWBQ89	967726	840	74 - 352	10592		H0305: 3 and H0589: 1.
HCWBQ86	574850	841	2 - 133	10593	Val-28 to Gly-44.	H0305: 2
HCWBQ87	842037	842	191 - 382	10594	Phe-15 to Arg-24, Pro-46 to Thr-57.	H0305: 3
HCWBQ96	954028	843	149 - 343	10595		H0305: 2 and H0556: 1.
HCWBQ90	523249	844	3 - 353	10596		H0305: 3 and H0589: 1.
HCWBQ91	720016	845	106 - 297	10597	His-33 to Lys-42.	H0589: 2, H0305: 1 and L0779: 1.
HCWBQ94	527676	846	3 - 98	10598	Gly-1 to Gly-9.	H0305: 2
HCWBQ95	927506	847	18 - 132	10599	Leu-9 to Leu-17, Gln-27 to His-34.	H0305: 1 and H0589: 1.
HCWBQ99	527562	848	2 - 151	10600	Arg-14 to Gly-20.	H0305: 2 and S0134: 1.
HCWBQ99	861864	849	92 - 337	10601		H0305: 5
HCWBQ99	850014	850	195 - 1	10602	Arg-1 to Trp-13, Lys-24 to Cys-43.	AR050: 16, AR051: 12, AR054: 7
HCWBQ99	668350	851	219 - 371	10603	Tyr-17 to Tyr-22.	H0305: 2
HCWBQ99	746335	852	155 - 355	10604	Gly-20 to Gly-26, Ser-39 to Ser-53.	H0305: 1 and H0589: 1.
HCWBQ99	725889	853	90 - 329	10605	Leu-7 to Cys-12.	H0305: 2
HCWBQ99	796584	854	198 - 410	10606	Glu-8 to Thr-13, Ala-37 to Leu-50.	H0457: 2, H0305: 1, L0363: 1 and H0444: 1.
HCWBQ99	527081	855	101 - 3	10607	Gln-1 to Leu-8.	H0305: 2
HCWBQ99	970694	856	108 - 10	10608		H0305: 3
HCWBQ99	506730	857	2 - 310	10609		H0305: 2
HCWBQ99	767491	858	3 - 98	10610		H0305: 2
HCWBQ99	706521	859	194 - 391	10611		H0305: 4 and H0589: 1.
HCWBQ99	849923	860	111 - 332	10612		H0305: 2 and H0445: 1.

HCWCB37	527683	861	1 - 210	10613		H0305: 3
HCWCB80	529234	862	2 - 163	10614		H0305: 2
HCWCB89	542340	863	188 - 75	10615		H0305: 5
HCWCC62	967306	864	183 - 344	10616		H0305: 3 and H0589: 1.
HCWCC77	527077	865	110 - 292	10617	Gly-11 to Gly-27.	H0305: 4 and H0589: 1.
HCWCC82	705347	866	2 - 355	10618		H0305: 2
HCWCE02	849968	867	2 - 232	10619	Ser-31 to Trp-43, Arg-48 to Gly-58.	H0305: 4
HCWCE21	523224	868	296 - 553	10620		H0305: 4 and L0731: 1.
HCWCE35	706489	869	27 - 215	10621		H0305: 2
HCWCE63	527678	870	17 - 256	10622	Leu-15 to Gln-20, Thr-26 to Arg-35.	H0305: 2
HCWCE69	757800	871	92 - 268	10623	Pro-14 to Gln-20, Arg-50 to Thr-59.	H0305: 2
HCWCE71	932549	872	62 - 205	10624		H0305: 3
HCWCE86	964648	873	167 - 403	10625	Ser-33 to Ser-38.	H0305: 8
HCWCF04	615626	874	1 - 51	10626	Gly-1 to Gly-7.	H0305: 2
HCWCF06	954580	875	3 - 218	10627		H0305: 2
HCWCF91	527558	876	1 - 276	10628		H0305: 3
HCWCF94	952684	877	1 - 186	10629	Gly-1 to Ala-13.	H0305: 1 and H0589: 1.
HCWCG31	527090	878	147 - 401	10630	Arg-1 to Val-11, Ala-75 to Gln-85.	H0305: 4, H0589: 2 and S0053: 1.
HCWCG62	575336	879	57 - 266	10631	Arg-6 to Pro-15.	H0305: 2
HCWCH01	920706	880	3 - 278	10632	Gly-17 to Thr-25.	H0305: 4
HCWCH22	675011	881	34 - 144	10633	Gly-4 to Leu-9, Leu-11 to Arg-16.	H0305: 2
HCWCH45	577704	882	3 - 305	10634	Val-23 to Gln-30, Asn-66 to Leu-73.	H0305: 2
HCWCI01	921586	883	1 - 168	10635	Met-30 to Pro-35.	H0305: 2
HCWCI38	556358	884	3 - 494	10636	Gly-17 to Ser-27.	H0305: 9 and H0589: 2.
HCWCI86	790718	885	60 - 161	10637		H0305: 3 and H0589: 1.
HCWCI85	529243	886	215 - 337	10638	Arg-14 to Pro-19.	H0305: 2
HCWCL10	888992	887	233 - 478	10639		H0305: 6
HCWCL62	715981	888	76 - 312	10640	Thr-12 to Asp-17, Ser-36 to Lys-59.	H0305: 1 and H0589: 1.

HCWCL67	751963	889	1 - 126	10641	Cys-29 to Ser-35.	H0305: 3
HCWCM16	667392	890	2 - 142	10642	Ser-45 to His-58.	H0305: 2
HCWCM65	529230	891	1 - 360	10643		AR089: 3, AR061: 1 H0305: 2 and H0589: 1.
HCWCM96	963564	892	124 - 237	10644		H0305: 3 and H0589: 1.
HCWGN25	518793	893	71 - 229	10645	Ile-6 to Trp-12.	H0305: 2
HCWGN40	835584	894	60 - 203	10646		H0305: 8 and H0589: 1.
HCWGN45	723418	895	277 - 378	10647	Lys-1 to Tyr-15.	H0305: 1 and H0521: 1.
HCWGN61	924894	896	42 - 308	10648		H0305: 3
HCWGN92	527088	897	2 - 175	10649		H0305: 2 and L0753: 1.
HCWC002	920876	898	22 - 261	10650		H0305: 1 and H0589: 1.
HCWC021	523225	899	2 - 157	10651	Ala-7 to Ala-12, Arg-33 to Trp-44.	H0305: 2
HCWC035	706490	900	93 - 374	10652	Glu-47 to Pro-54, Ala-72 to Arg-79.	H0305: 1 and H0589: 1.
HCWC054	558274	901	84 - 182	10653		H0305: 3 and H0589: 1.
HCWC063	557917	902	125 - 274	10654	Gly-39 to Pro-44.	H0305: 3
HCWC072	527546	903	91 - 213	10655	Gly-17 to Gln-26.	H0305: 2
HCWC077	772515	904	1 - 102	10656	Gly-1 to Pro-7, Arg-25 to Ser-32.	H0305: 1 and H0589: 1.
HCWCP68	573148	905	1 - 162	10657	Pro-6 to Phe-14.	H0305: 2, S0114: 1 and L0527: 1.
HCWCQ15	527688	906	191 - 325	10658	Phe-28 to Pro-33.	H0305: 2
HCWCQ48	531423	907	3 - 71	10659		H0305: 2
HCWCQ95	723610	908	2 - 112	10660	Pro-2 to Arg-11.	H0305: 2
HCWCR31	693632	909	31 - 411	10661		AR089: 42, AR061: 4 H0305: 2, L0483: 1, L0764: 1, L0747: 1, L0756: 1 and L0758: 1.
HCWCR64	526482	910	3 - 185	10662	Thr-1 to Lys-6, Arg-52 to Ala-57.	H0305: 2
HCWCS12	585202	911	7 - 237	10663	Thr-22 to Trp-28, Lys-36 to Lys-47, Lys-71 to Pro-77.	H0305: 3
HCWCS51	921636	912	1 - 123	10664		H0305: 3

HCWCT07	954070	913	104 - 271	10665				H0305: 2
HCWCT23	676336	914	30 - 191	10666	Gln-5 to Trp-13.			H0305: 3
HCWCT48	741925	915	198 - 365	10667				H0305: 2 and H0589: 1.
HCWCT83	527543	916	125 - 214	10668				H0305: 2
HCWCU01	921618	917	2 - 154	10669	Lys-16 to Asp-25.			H0305: 2, L0518: 1 and L0593: 1.
HCWCU17	577688	918	14 - 139	10670	Met-20 to Tyr-25.			H0305: 2
HCWCU32	725584	919	1 - 441	10671				AR051: 399, AR050: 312, AR054: 268
								H0305: 8
HCWCU57	764602	920	46 - 261	10672	Gln-23 to Val-28, Phe-67 to Arg-72.			H0305: 3, L0805: 1 and H0543: 1.
HCWCU58	527695	921	3 - 269	10673	Lys-1 to Lys-7.			H0305: 2
HCWCU63	527541	922	2 - 175	10674				H0305: 3
HCWCU94	713416	923	3 - 272	10675				H0305: 1 and H0589: 1.
HCWCV01	921569	924	101 - 238	10676				H0305: 2
HCWCV09	861950	925	217 - 432	10677				H0305: 5
HCWCV16	861839	926	3 - 377	10678	Gln-6 to Asn-11, Pro-21 to Thr-26.			H0305: 3 and H0589: 1.
HCWCV58	966512	927	180 - 326	10679	Ser-1 to Arg-6, Pro-15 to Thr-27.			H0305: 1 and H0589: 1.
HCWCV75	527080	928	3 - 239	10680	Gly-14 to Trp-31.			H0305: 4
HCWCV85	966987	929	116 - 247	10681				H0305: 3
HCWCV93	792550	930	2 - 88	10682				H0305: 2
HCWCX18	574933	931	89 - 256	10683	Gln-1 to Ala-6, Gln-31 to Thr-36.			H0305: 5 and H0589: 1.
HCWCY16	507191	932	110 - 229	10684				H0305: 2
HCWCZ33	523265	933	3 - 200	10685				H0305: 9
HCWDB74	521894	934	76 - 279	10686	Thr-23 to Ser-29.			H0305: 3
HCWDB94	531417	935	77 - 277	10687				H0305: 2
HCWDD15	660571	936	2 - 277	10688				H0305: 1, L0664: 1 and H0444: 1.
HCWDD60	575555	937	2 - 130	10689				H0305: 4
HCWDG46	715509	938	65 - 160	10690	Lys-3 to Leu-15.			H0305: 2
HCWDG49	861951	939	3 - 461	10691	Phe-16 to Arg-24.			H0305: 2

HCWDH65	574250	940	297 - 479	10692	Ser-35 to Arg-41.	H0305: 2
HCWDH85	574262	941	53 - 181	10693		H0305: 2
HCWDH92	790618	942	16 - 198	10694	Leu-18 to His-23.	H0305: 1 and H0589: 1.
HCWDJ37	849867	943	159 - 329	10695	Gln-3 to Ser-9.	H0305: 5
HCWDJ43	527685	944	32 - 274	10696	Arg-24 to Trp-40, Phe-49 to Ser-54, Gly-63 to Trp-71.	H0305: 2
HCWDJ64	924632	945	72 - 185	10697		H0305: 2
HCWDJ72	573034	946	49 - 177	10698	Arg-16 to Thr-27, Leu-34 to Pro-43.	H0305: 2
HCWDJ79	526765	947	18 - 143	10699	Pro-10 to Gly-15, Ala-38 to Arg-43,	H0305: 3
HCWDJ82	671636	948	2 - 208	10700	Ser-52 to Pro-59.	H0305: 2
HCWDJ89	953750	949	248 - 460	10701	Ser-1 to Gln-10, Pro-49 to Lys-59.	H0305: 3, L0749: 3, L0748: 2, H0589: 1, L0481: 1, L0772: 1 and L0589: 1.
HCWDJ92	733422	950	34 - 189	10702	Glu-45 to Ala-52.	H0305: 2
HCWDJ21	524780	951	97 - 279	10703		H0305: 3
HCWDJ23	527555	952	1 - 360	10704	Thr-2 to Ala-10.	AR089: 0, AR061: 0
HCWDJ31	531418	953	91 - 240	10705	Gly-1 to Ser-12, Ser-19 to Gly-27.	H0305: 2
HCWDJ45	523227	954	49 - 435	10706	Glu-1 to Gln-6, Pro-21 to Trp-26.	H0305: 3
HCWDJ89	697736	955	141 - 422	10707	Asn-5 to Thr-13.	H0589: 2, H0305: 1 and H0444: 1.
HCWDL19	669721	956	55 - 222	10708	Ser-19 to Glu-36.	H0305: 3 and L0766: 1.
HCWDL45	889416	957	118 - 282	10709	Ala-33 to Ile-42.	AR089: 16, AR061: 4
HCWDL68	752320	958	2 - 175	10710	Ala-1 to Asn-8, Ser-44 to Arg-51.	H0305: 6 and S0052: 1. H0305: 1 and S0052: 1.
HCWDM02	920563	959	155 - 379	10711		
HCWDM06	935898	960	1 - 189	10712	Ser-44 to Asn-49.	H0305: 2
						H0305: 3

HCWDM07	953742	961	202 - 480	10713		H0305: 3	
HCWDM14	849562	962	85 - 291	10714		H0305: 5 and L0375: 1.	
HCWDM23	676215	963	142 - 303	10715	Asn-5 to Gln-14.	H0305: 2 and H0589: 1.	
HCWDM60	754785	964	80 - 337	10716		H0305: 4 and H0589: 1.	
HCWDM79	578967	965	2 - 274	10717	Glu-53 to Gly-58.	H0305: 1 and H0589: 1.	
HCWDM15	557862	966	92 - 205	10718		H0305: 2 and L0020: 1.	
HCWDM60	861882	967	1 - 285	10719	Gly-3 to Phe-12, Ala-70 to Ala-77.	H0305: 2 and L0657: 1.	
HCWDO11	967364	968	162 - 353	10720	Pro-22 to His-31.	H0305: 3	
HCWDO56	961273	969	106 - 369	10721	Glu-19 to Gly-24, Ala-39 to Leu-45, Pro-56 to Trp-64.	H0305: 13 and H0253: 1.	
HCWDO65	920523	970	66 - 314	10722	Asp-18 to Leu-27, Lys-51 to Lys-62.	H0305: 4	
HCWDP85	747141	971	162 - 296	10723	Asn-14 to Lys-25.	H0305: 2	
HCWDO35	573577	972	2 - 286	10724	Thr-11 to Thr-16.	H0305: 2	
HCWDR01	839104	973	3 - 479	10725	Arg-78 to Lys-97.	AR089: 1, AR061: 0 H0305: 4 and H0589: 1.	
HCWDR42	529354	974	95 - 298	10726		H0305: 2	
HCWDR63	849899	975	249 - 503	10727	Asp-35 to Pro-52.	H0305: 3 and H0580: 1.	
HCWDR86	527690	976	2 - 253	10728		H0305: 4 and L0748: 1.	
HCWDR89	787025	977	114 - 296	10729	Arg-1 to Asp-7.	H0305: 2	
HCWDS10	880973	978	210 - 422	10730		H0305: 3	
HCWDS19	418009	979	2 - 217	10731	Ala-6 to Ser-11.	H0305: 2	
HCWDS26	684696	980	81 - 305	10732	Phe-5 to Gly-10, Pro-32 to Cys-40.	H0305: 1 and H0589: 1.	
HCWDS40	523301	981	182 - 439	10733	Arg-1 to Thr-8.	H0305: 5 and H0589: 1.	
HCWDS41	669754	982	3 - 365	10734	Asp-8 to Ala-21, Pro-23 to Ala-32, Leu-34 to Val-49.	H0305: 3	
HCWDS48	861849	983	163 - 438	10735	Arg-10 to Gln-25, Ser-69 to Phe-84.	H0305: 2, H0589: 1 and L0520: 1.	
HCWDS52	771881	984	46 - 204	10736	Tyr-23 to Lys-29.	H0305: 2 and H0589: 1.	
HCWDS55	861943	985	26 - 454	10737	Arg-4 to Gly-10, Ser-13 to Asn-18.	H0305: 3	



HCWDS59	934914	986	248 - 430	10738	Gln-29 to Val-36.	H0305: 2 and H0589: 2.
HCWDS61	741592	987	136 - 393	10739	Arg-9 to Arg-19.	H0305: 2
HCWDS83	612257	988	181 - 492	10740		H0305: 2
HCWDS91	557931	989	98 - 445	10741	Asn-8 to Gly-13.	H0305: 2
HCWDS94	959650	990	3 - 191	10742	Ser-2 to Ser-7.	H0305: 8
					Ala-16 to Ala-29.	
HCWDT12	573487	991	146 - 301	10743	Tyr-34 to Cys-40.	H0305: 2
HCWDT84	542238	992	3 - 242	10744	His-1 to Ala-16.	H0305: 7
					Gly-22 to Cys-29.	
HCWDV17	974478	993	32 - 697	10745	Ala-144 to Gln-151.	AR089: 12, AR061: 6
					Thr-162 to Thr-168.	H0305: 4
HCWDV82	529210	994	1 - 138	10746	Arg-1 to Cys-10.	H0305: 2
					Gly-25 to Ala-35.	
HCWDW05	852997	995	108 - 212	10747	Ser-1 to Trp-9.	H0305: 1 and H0589: 1.
					Arg-14 to Glu-26.	
HCWDW08	861936	996	2 - 193	10748		H0305: 4
HCWDW13	523236	997	114 - 317	10749		H0305: 4
HCWDW17	849938	998	3 - 224	10750	Leu-57 to Arg-69.	H0305: 2
HCWDW29	849939	999	26 - 202	10751	Ser-1 to Ser-9.	H0305: 2
HCWDW33	573554	1000	16 - 141	10752		H0305: 2
HCWDW42	462405	1001	170 - 370	10753		H0305: 2
HCWDW43	714423	1002	74 - 229	10754	His-3 to Ala-10.	H0305: 2
HCWDW57	927656	1003	3 - 167	10755		H0305: 3
HCWDW61	574859	1004	115 - 273	10756	Leu-2 to Gln-7.	H0305: 6
					Pro-36 to Gly-47.	
HCWDW62	849960	1005	360 - 599	10757		H0305: 7 and H0589: 2.
HCWDW73	861934	1006	46 - 303	10758		21q11.1
HCWDW74	952698	1007	162 - 329	10759	Ser-8 to Gly-13.	H0305: 3
HCWDW78	773698	1008	1 - 270	10760	Asp-65 to Leu-71.	H0589: 2 and H0305: 1.
HCWDW90	529233	1009	19 - 165	10761	Lys-18 to Gln-24.	H0305: 2
					Ala-33 to Ser-39.	
HCWDW93	574155	1010	1 - 150	10762	Thr-7 to Cys-12.	H0305: 2
					Thr-28 to Asp-36.	
					Phe-39 to Asn-48.	
HCWDW94	753166	1011	489 - 824	10763		H0305: 2, H0589: 1 and

HCWDW96	975401	1012	1 - 66	10764	Met-2 to Asn-12.	H0543: 1.	
HCWDX19	523233	1013	264 - 461	10765		H0306: 4 and H0305: 3.	
HCWDX22	967361	1014	69 - 242	10766	Val-19 to Pro-25, Thr-31 to Leu-44.	H0305: 3 and H0589: 1. H0305: 3 and H0589: 1.	
HCWDX36	861932	1015	69 - 323	10767	Pro-3 to His-12, Arg-52 to His-57, His-64 to Asp-69, His-21 to Thr-26.	H0305: 2, L0749: 2 and H0589: 1.	
HCWDX39	573574	1016	48 - 239	10768	Asn-1 to Gly-19, His-21 to Thr-26.	H0305: 2	
HCWDX52	661568	1017	346 - 549	10769	Lys-1 to Ile-7, Gly-33 to Tyr-44.	H0305: 3 and H0589: 1.	
HCWDX65	920877	1018	1 - 213	10770	Gly-1 to Gly-9, Arg-53 to Asn-60.	H0305: 6	
HCWDX76	932614	1019	2 - 238	10771	Ala-1 to Asp-6, Ala-8 to Gly-14.	H0305: 3	
HCWDX85	861933	1020	106 - 342	10772		H0305: 2 and H0591: 1.	
HCWDY47	573557	1021	70 - 273	10773		H0305: 3	
HCWDZ13	657398	1022	3 - 248	10774		H0305: 6	
HCWDZ89	576697	1023	33 - 164	10775		H0305: 2 and H0589: 1.	
HCWEA30	681277	1024	2 - 187	10776	Lys-14 to Gln-19, Phe-28 to Trp-38, His-41 to Asp-56.	H0305: 1 and H0589: 1.	
HCWEA65	849918	1025	87 - 218	10777		H0305: 2	
HCWEA77	666180	1026	6 - 314	10778	Thr-1 to Leu-8, Arg-25 to Arg-33.	H0305: 1, H0589: 1 and H0318: 1.	
HCWEA78	697596	1027	3 - 308	10779	Asp-29 to Trp-35, Lys-37 to Thr-48, Asp-93 to Pro-99.	H0589: 3 and H0305: 1.	
HCWEA82	719028	1028	68 - 214	10780		H0305: 2	
HCWEA84	506718	1029	2 - 223	10781	Val-16 to Ile-24, Lys-40 to His-47.	H0305: 2	
HCWEA86	574858	1030	87 - 179	10782		H0305: 2	
HCWEB11	975408	1031	2 - 79	10783	Glu-1 to Lys-7.	H0305: 6, H0306: 1 and H0402: 1.	
HCWEB25	925102	1032	2 - 226	10784	Arg-22 to Trp-28.	H0305: 3, S0218: 1 and	

HCWEB28	932114	1033	129 - 353	10785	Gly-41 to Gln-47.	H0264: 1.
HCWEB33	925286	1034	144 - 362	10786		H0305: 6
HCWEB37	849854	1035	29 - 256	10787		H0305: 5
HCWEB40	514584	1036	210 - 1	10788	Leu-7 to Leu-13, Ser-21 to His-27.	H0305: 3
	711336	9550	23 - 238	19302	Gln-14 to His-20, Thr-27 to Asp-43.	
HCWEB56	527051	1037	169 - 390	10789		H0305: 3 and H0589: 3.
HCWEB71	573147	1038	145 - 342	10790	Leu-8 to Gly-20, Asp-28 to Tyr-33.	H0305: 3
HCWED11	948689	1039	42 - 221	10791	Thr-35 to Thr-47.	H0305: 2, H0589: 1 and L0752: 1.
HCWED13	573413	1040	232 - 360	10792		H0305: 5
HCWED61	971865	1041	2 - 289	10793		H0305: 1, L0363: 1, H0187: 1, H0576: 1 and L0748: 1.
HCWEE02	920544	1042	2 - 202	10794		H0305: 2
HCWEE03	924743	1043	72 - 404	10795		H0305: 3 and L0779: 1.
HCWEE07	953731	1044	149 - 304	10796	Gly-6 to Gly-12.	H0305: 3
HCWEE22	572960	1045	2 - 352	10797	Pro-37 to Gly-48.	H0305: 3
HCWEE74	738264	1046	2 - 319	10798	Ala-9 to Pro-17.	H0305: 2
HCWEE76	770169	1047	121 - 291	10799	Gln-3 to Cys-14.	H0305: 3
HCWEE83	781302	1048	3 - 227	10800	Ala-1 to Asp-13.	H0305: 2
HCWEEF56	573570	1049	3 - 461	10801	Pro-42 to Asp-48.	H0305: 4
HCWEEF91	849919	1050	21 - 293	10802	Pro-1 to Arg-8, Arg-18 to Ser-42.	H0305: 3
HCWEEF92	573568	1051	78 - 362	10803	Phe-8 to Gln-13.	H0305: 3
HCWEEF95	526766	1052	1 - 297	10804		H0305: 5
HCWEG09	523251	1053	2 - 292	10805	Thr-12 to Thr-17.	H0305: 3
HCWEG23	531421	1054	112 - 354	10806	Asp-18 to Gln-24, Pro-42 to Asp-49, Pro-76 to Tyr-81.	H0305: 3
HCWEG31	695687	1055	2 - 247	10807	Ser-13 to Val-18, Pro-43 to Tyr-49.	H0305: 2
HCWEG47	574191	1056	84 - 215	10808	Gly-34 to Leu-40.	H0305: 2

HCWEG51	964642	1057	69 - 203	10809	Glu-3 to Ile-19, Ser-33 to Glu-42.	H0305: 5	
HCWEG69	948693	1058	3 - 248	10810		H0305: 3	
HCWEG70	881254	1059	177 - 443	10811		H0305: 2	
HCWEG86	572980	1060	36 - 371	10812	Glu-43 to Cys-52, Pro-76 to Arg-81, Ser-87 to Ala-94, Arg-96 to Arg-112.	H0305: 1 and H0589: 1.	
HCWEH27	527050	1061	65 - 403	10813	Leu-1 to Asn-6, His-48 to Ser-59, Cys-76 to Gly-83.	H0305: 6	
HCWEH53	967056	1062	66 - 320	10814		H0305: 3 and H0589: 1.	
HCWEH76	574187	1063	171 - 332	10815	Thr-9 to Thr-15, Ser-32 to Leu-46.	H0305: 2	
HCWEH93	933146	1064	3 - 326	10816	His-1 to Thr-12.	H0305: 3	
HCWEH94	667919	1065	757 - 284	10817		H0305: 3 and H0255: 1.	
HCWEI19	948690	1066	178 - 309	10818		AR089: 4, AR061: 2	
HCWEI30	666625	1067	67 - 273	10819	Val-11 to Leu-18.	H0305: 2	
HCWEI43	573508	1068	101 - 244	10820	Trp-8 to Thr-14, Phe-20 to Pro-26.	H0305: 2	
HCWEI45	576852	1069	1 - 99	10821		H0305: 2 and H0423: 1.	
HCWEI78	861918	1070	1 - 267	10822		H0305: 1 and H0589: 1.	
HCWEI80	573534	1071	11 - 220	10823		H0305: 2	
HCWEI83	529351	1072	1 - 273	10824	Pro-22 to Ser-27, Pro-30 to Thr-36, Arg-43 to Glu-55, Pro-57 to Cys-63, Pro-76 to Ala-86.	H0305: 2 and H0589: 1.	
HCWEI91	529650	1073	3 - 323	10825	Thr-28 to Ala-40, Lys-91 to Glu-99.	H0305: 3	
HCWEI02	920488	1074	155 - 463	10826	Ser-1 to Met-15, His-17 to Arg-38.	H0305: 2 and H0589: 1.	
HCWEI08	959734	1075	202 - 438	10827	Pro-18 to Ala-26.	H0305: 5 and H0589: 2.	
HCWEI22	954137	1076	1 - 297	10828		H0305: 4 and H0589: 1.	
HCWEI26	576717	1077	131 - 379	10829	Pro-41 to Pro-46.	H0305: 2, L0764: 2, L0590:	

HCWEL43	573526	1078	76 - 333	10830	Thr-2 to Arg-9.	2, H0650: 1 and H0486: 1.
HCWEL69	757674	1079	11 - 214	10831		H0305: 3
HCWEL91	572857	1080	94 - 228	10832		S0114: 1, H0305: 1, L0761: 1 and L0662: 1.
HCWEL59	855734	1081	1 - 231	10833		H0305: 3
HCWEL74	573134	1082	188 - 484	10834		H0305: 2
HCWEL80	574157	1083	1 - 324	10835	Ser-33 to Leu-40.	H0305: 3
					Asp-25 to Gly-32.	H0305: 3
					Ser-40 to His-45.	
					Leu-51 to Gly-56.	
HCWEL84	572843	1084	123 - 254	10836	Pro-6 to Cys-19.	H0305: 2 and H0589: 1.
					Glu-26 to Gln-34.	
HCWEL89	861914	1085	37 - 258	10837	Lys-1 to Ser-8.	H0305: 2
HCWEL01	916972	1086	1 - 249	10838	Asp-1 to Leu-12.	H0305: 2
					Asn-34 to Ser-39.	
					Pro-77 to Arg-82.	
HCWEL08	881309	1087	1 - 153	10839	Ala-18 to Arg-23.	H0305: 2
					Tyr-40 to Gly-45.	
HCWEL18	827387	1088	1 - 279	10840	Asp-45 to Arg-52.	H0305: 7
HCWEL27	572846	1089	67 - 192	10841		H0305: 2
HCWEL47	523304	1090	126 - 296	10842		H0305: 5 and H0589: 2.
HCWEL52	577417	1091	23 - 463	10843	Thr-7 to Val-15.	H0305: 1 and H0271: 1.
					Lys-56 to Leu-63.	
					Ser-70 to Gly-77.	
HCWEL55	572951	1092	155 - 295	10844		H0305: 2
HCWEL96	529223	1093	1 - 192	10845		H0305: 3
HCWEM10	968044	1094	131 - 232	10846	Asp-1 to Trp-9.	S0218: 1 and H0305: 1.
					Val-11 to Lys-21.	
HCWEM37	573151	1095	3 - 248	10847		H0305: 2 and H0589: 1.
HCWEM51	920887	1096	3 - 392	10848	Glu-73 to Glu-82.	H0305: 3 and H0589: 1.
HCWEM20	529237	1097	1 - 342	10849	Gly-71 to Leu-76.	H0305: 4
HCWEN86	573527	1098	1 - 324	10850		H0305: 3
HCWEP18	913670	1099	304 - 414	10851	Lys-23 to Leu-32.	H0305: 7 and H0589: 1.
HCWEP34	523238	1100	107 - 448	10852	Lys-38 to Met-43.	H0305: 6
HCWEP39	660232	1101	3 - 473	10853	His-1 to Leu-8.	H0305: 5

HCWER40	506759	1102	34 - 291	10854	Glu-1 to Lys-6.	H0305: 2	
HCWER43	921346	1103	48 - 239	10855	Arg-29 to Cys-39.	H0305: 4	
HCWE001	861910	1104	110 - 208	10856		H0305: 3	
HCWEQ14	908245	1105	1 - 177	10857	Leu-43 to Tyr-48.	AR089: 39, AR061: 8 H0305: 3	
HCWEQ15	660520	1106	74 - 298	10858		H0305: 2	
HCWEQ27	849860	1107	120 - 404	10859	Gly-25 to Glu-34, Lys-35 to Glu-62, Ser-64 to Asn-71, Asn-74 to Pro-79.	H0305: 2 and H0589: 1.	
HCWEQ37	849985	1108	1 - 180	10860		H0305: 2	
HCWEQ89	529240	1109	169 - 324	10861	Thr-13 to Trp-19, Thr-29 to Arg-35.	H0305: 3	
HCWER22	674807	1110	26 - 103	10862	Val-3 to Glu-10.	H0305: 2	
HCWER37	849916	1111	1 - 381	10863	Asp-6 to Gly-11.	H0305: 3	
HCWER61	574921	1112	1 - 102	10864		H0305: 2	
HCWER81	574167	1113	268 - 378	10865	Phe-3 to Asn-9.	H0305: 2	
HCWES03	921933	1114	198 - 380	10866	His-1 to Ala-6.	H0305: 2 and S0052: 1.	
HCWES06	935862	1115	41 - 148	10867	Arg-7 to Thr-17, Pro-29 to Glu-35.	H0305: 1 and H0589: 1.	
HCWEW45	571355	1116	1 - 207	10868	Arg-1 to Gly-6, Glu-18 to Arg-51.	H0305: 2 and H0486: 1.	
HCWEW76	861966	1117	202 - 372	10869		H0305: 4 and L0517: 1.	
HCWEW77	664922	1118	213 - 419	10870	Ile-1 to Ser-6, Asp-11 to Thr-19.	H0305: 4	
HCWEX05	928121	1119	64 - 339	10871	Cys-11 to Ala-17.	H0305: 2	
HCWEX40	574940	1120	85 - 246	10872	Gln-26 to Lys-37, Glu-43 to Ser-52.	H0305: 2	
HCWEX59	709560	1121	83 - 349	10873	Tyr-11 to Phe-17.	H0305: 8 and H0589: 1.	
HCWEX66	731772	1122	163 - 294	10874	Glu-12 to Ser-19.	H0305: 2	
HCWEY07	953701	1123	2 - 424	10875	Ala-1 to Ser-8, Arg-52 to Asn-58.	H0305: 5	
HCWEY33	702597	1124	76 - 432	10876		H0305: 2	
HCWEY34	954142	1125	1 - 246	10877	Pro-2 to Gly-12.	H0305: 3	
HCWEY84	952692	1126	72 - 296	10878	Cys-25 to Val-31.	H0305: 2 and H0589: 1.	

HCWFY88	785508	1127	24 - 308	10879	Lys-37 to Arg-42.	H0305: 2
HCWFA14	925301	1128	42 - 311	10880	Val-20 to Glu-25. Ser-58 to His-63, Leu-65 to Cys-75.	H0305: 13 and H0589: 2.
HCWFA65	573193	1129	95 - 250	10881		H0305: 2
HCWFA88	578943	1130	87 - 281	10882		H0305: 2
HCWFA89	574370	1131	12 - 248	10883		S0053: 2 and H0305: 1.
HCWFC05	932194	1132	1 - 198	10884	Gly-1 to Pro-7.	H0305: 2
HCWFC17	573186	1133	183 - 380	10885	Gly-9 to Glu-14, Gln-16 to Gly-22, Leu-27 to Ser-40.	H0305: 2
HCWFC65	883787	1134	3 - 287	10886	His-1 to Gly-9.	H0305: 3
HCWFD07	953700	1135	295 - 534	10887	Gly-59 to Gln-65.	H0305: 2 and H0589: 1.
HCWFD19	574915	1136	1 - 279	10888	Pro-24 to Cys-29.	H0305: 2
HCWFD29	573381	1137	1 - 222	10889		H0305: 2
HCWFD47	671946	1138	123 - 296	10890		H0305: 3 and L0666: 1.
HCWFD64	954575	1139	1 - 111	10891	Ala-1 to Arg-8.	H0305: 4 and L0748: 1.
HCWFE06	935856	1140	209 - 391	10892	Lys-20 to Ile-25.	H0305: 2
HCWFE18	573445	1141	2 - 112	10893	Thr-16 to Lys-31.	H0305: 2
HCWFF41	849978	1142	3 - 149	10894	Glu-2 to Gly-24.	H0305: 2
HCWFF88	506577	1143	41 - 187	10895	Pro-1 to Gly-6, Ala-41 to Leu-47, Leu-13 to Arg-24.	AR089: 15, AR061: 6 H0305: 2
HCWFG65	578936	1144	1 - 126	10896		H0305: 2
HCWFJ72	856908	1145	267 - 482	10897		H0255: 1, H0305: 1, H0589: 1, H0635: 1 and L0384: 1.
HCWFK16	849988	1146	3 - 161	10898	Val-2 to Thr-7.	H0305: 2
HCWFK20	575696	1147	14 - 238	10899		H0305: 2
HCWFK35	916795	1148	3 - 260	10900	Val-3 to Arg-10.	H0305: 7, H0255: 1 and L0766: 1.
HCWFK57	861907	1149	13 - 276	10901	Thr-72 to Asn-80.	AR089: 1, AR061: 1 H0305: 3 and H0589: 1.
HCWFK73	761655	1150	2 - 184	10902	Pro-50 to Lys-56.	H0305: 2
HCWFK91	954008	1151	2 - 157	10903	Glu-35 to Thr-47.	H0305: 3
HCWFL10	964853	1152	2 - 331	10904	Pro-1 to Gly-7, Arg-48 to Ala-55.	H0305: 2

HCWFL31	953579	1153	3 - 179	10905	Ser-66 to Asp-87.	H0305: 3 and L0518: 1.	
HCWFL45	577950	1154	200 - 415	10906		H0305: 3	
HCWFL78	529218	1155	3 - 170	10907	Lys-1 to Ala-9.	H0305: 6	
HCWFL86	523359	1156	125 - 295	10908	His-25 to Cys-33.	H0305: 6	
HCWFL94	575522	1157	75 - 230	10909		H0305: 3, L0740: 2 and L0596: 1.	
HCWFM01	916803	1158	106 - 231	10910		H0305: 1 and H0589: 1.	
HCWFM11	959457	1159	26 - 379	10911		H0305: 2	
HCWFM16	786627	1160	80 - 379	10912	Asp-18 to Thr-25.	H0305: 2 and L0750: 1.	22q13.31
HCWFM26	677348	1161	2 - 313	10913	Tyr-27 to Leu-33.	H0305: 3	
HCWFM43	715387	1162	3 - 101	10914	Pro-17 to Ile-23.	H0305: 2	
HCWFM59	757660	1163	85 - 219	10915		H0305: 3	
HCWFM60	740470	1164	244 - 390	10916		H0305: 2	
HCWFM65	849957	1165	93 - 233	10917	Ala-1 to Lys-7.	H0305: 6 and H0589: 1.	
HCWFM77	706488	1166	1 - 165	10918		H0305: 1, H0589: 1 and S0426: 1.	
HCWFN14	680404	1167	70 - 288	10919	Gly-50 to Lys-62.	H0305: 3	
HCWFN22	674750	1168	3 - 155	10920	Val-9 to Ser-14.	H0305: 3 and H0589: 1.	
HCWFN37	576547	1169	96 - 206	10921		H0305: 2	
HCWFO01	916814	1170	135 - 371	10922		H0305: 3 and H0589: 1.	
HCWFO02	920416	1171	2 - 175	10923	Asn-53 to Arg-58.	H0305: 2	
HCWFO20	577709	1172	93 - 269	10924		H0305: 3	
HCWFO24	664581	1173	45 - 272	10925		H0305: 3 and H0589: 1.	
HCWFO30	692814	1174	70 - 231	10926	Gly-34 to His-45.	H0305: 2	
HCWFO40	913855	1175	102 - 419	10927	Lys-37 to Trp-46, Arg-68 to Trp-73.	H0305: 3	
HCWFO51	725756	1176	2 - 85	10928	Lys-8 to Met-20.	H0305: 1 and H0589: 1.	
HCWFP21	531288	1177	195 - 437	10929	Gly-23 to Gly-30, Lys-32 to Leu-42.	H0305: 6	
HCWFP27	927700	1178	2 - 232	10930		H0305: 7	
HCWFP47	849893	1179	1 - 411	10931	Ser-47 to Ser-78.	AR089: 2, AR061: 0	
HCWFP71	933211	1180	169 - 354	10932		H0305: 3	
						H0305: 5 and H0589: 1.	



HCWFP81	576363	1181	124 - 318	10933	Lys-4 to Met-12, Ser-17 to Ser-24, Arg-37 to Lys-43.	H0305: 2
HCWFR11	967266	1182	2 - 121	10934		H0305: 2
HCWFR83	721373	1183	100 - 258	10935	Thr-12 to Thr-20.	H0305: 1 and H0589: 1.
HCWFS22	971566	1184	68 - 379	10936	Arg-19 to Arg-28, Pro-41 to Ser-47.	H0305: 3 and L0794: 1.
HCWFS65	572953	1185	3 - 245	10937	His-1 to Glu-8, Arg-10 to Glu-15, Arg-21 to Ala-27, Ala-67 to Asp-72.	H0305: 3
HCWFT29	690751	1186	48 - 236	10938	Ser-18 to Thr-23, Gly-35 to Glu-45.	H0305: 2
HCWFT33	959471	1187	118 - 2	10939	Ser-12 to Thr-21.	H0305: 7
HCWFT44	935855	1188	1 - 318	10940	Leu-9 to Asp-14.	H0305: 6
HCWFT77	739571	1189	15 - 218	10941		H0305: 2
HCWFT84	542236	1190	199 - 408	10942	Ser-21 to Ser-32.	H0305: 6
HCWFT03	921944	1191	143 - 319	10943	Thr-24 to Ser-30, Lys-54 to Lys-59.	H0305: 2, L0542: 1, L0779: 1, L0758: 1 and L0600: 1.
HCWFT07	861902	1192	1 - 84	10944	Ser-18 to Ser-27.	H0305: 2
HCWFTU9	577315	1193	1 - 333	10945		H0305: 2
HCWFTU32	716340	1194	79 - 258	10946	Lys-49 to Thr-60.	H0305: 3 and H0589: 2.
HCWFTU64	577888	1195	3 - 206	10947		H0305: 3, L0368: 1 and L0779: 1.
HCWFTU66	853005	1196	3 - 311	10948		AR061: 1, AR089: 1
HCWFTU76	576839	1197	177 - 293	10949	Gly-14 to Ala-19, Leu-22 to Tyr-39.	H0305: 1 and H0589: 1.
HCWFTU83	574864	1198	95 - 310	10950	Asp-1 to Pro-12, Pro-25 to Ala-35.	H0305: 2
HCWFTV16	849953	1199	158 - 367	10951	Ser-34 to Gly-44, Pro-55 to Arg-62.	H0305: 4 and H0402: 1.
HCWFTV21	849905	1200	136 - 312	10952	Ser-47 to Lys-54.	H0305: 2 and H0589: 1.
HCWFTV25	733993	1201	3 - 233	10953	Leu-48 to Arg-54.	H0305: 4
						H0305: 5, H0589: 3, L0748: 3, H0402: 1, L0518: 1, L0809: 1 and H0445: 1.

HCWVF32	960099	1202	64 - 153	10954	Arg-1 to Glu-9, Ala-21 to Pro-30.	H0305: 3	
HCWVF34	577896	1203	2 - 301	10955		H0305: 2 and H0589: 1.	
HCWVF37	575715	1204	3 - 167	10956	Val-8 to Arg-15, Ile-36 to Glu-42.	H0305: 3 and H0589: 1.	
HCWVF50	723666	1205	39 - 446	10957	Gly-1 to Pro-7	H0305: 3 and H0589: 1.	
HCWVF69	527087	1206	80 - 208	10958	Asn-22 to Ser-28.	H0305: 4 and H0589: 2.	
HCWVF51	671807	1207	211 - 307	10959	Lys-4 to Glu-10, Ala-30 to Glu-36.	H0305: 2, H0063: 1 and L0635: 1.	
HCWFX23	675902	1208	3 - 191	10960		H0305: 2	
HCWFX30	825920	1209	199 - 336	10961	Ile-13 to Asn-18.	H0305: 2	
HCWFX44	703028	1210	34 - 450	10962	Thr-27 to Leu-43.	H0305: 2 and L0748: 1.	
HCWFX30	692719	1211	97 - 252	10963		H0305: 2 and H0589: 1.	
HCWFX56	733414	1212	92 - 307	10964	Ser-9 to Tyr-18.	H0305: 1 and S0053: 1.	
HCWGA27	861968	1213	200 - 337	10965		H0305: 3 and H0589: 1.	123270, 245200, 251600, 270100, 276900
HCWGA32	699272	1214	94 - 285	10966	Ser-16 to Asp-28, Ser-48 to Ser-53.	H0305: 2	
HCWGB61	733105	1215	3 - 230	10967	Phe-1 to His-7, Pro-52 to Ser-57.	H0305: 1 and H0589: 1.	
HCWGB64	578734	1216	56 - 166	10968	Ile-12 to Ser-18.	H0305: 3	
HCWGB78	861843	1217	111 - 392	10969	Cys-23 to Phe-33.	AR089: 2, AR061: 1 H0305: 2 and H0589: 1.	
HCWGC02	917348	1218	75 - 257	10970	Lys-7 to Ser-12.	H0305: 2 and H0589: 1.	
HCWGC50	772358	1219	147 - 392	10971	His-36 to Tyr-45, Thr-52 to Pro-64, Pro-66 to Glu-74.	H0305: 3	
HCWGD20	906973	1220	191 - 379	10972	Ser-1 to Asp-11, Leu-13 to Gly-25.	H0305: 3	
HCWGD33	849909	1221	57 - 209	10973		H0305: 2	
HCWGD66	496411	1222	49 - 189	10974		H0305: 2	
HCWGE12	967067	1223	211 - 300	10975		AR061: 1, AR089: 0 H0305: 3	
HCWGE22	727967	1224	72 - 239	10976		H0305: 2	

HCWGE23	853004	1225	229 - 441	10977					
HCWGE25	657236	1226	3 - 377	10978		Glu-22 to Glu-28, Leu-107 to Met-116.		H0305: 4 and H0589: 1. H0305: 4 and H0589: 2.	
HCWGE39	705403	1227	2 - 61	10979		Ala-1 to Thr-6.		H0305: 2, L0666: 1 and L0749: 1.	
HCWGE47	925105	1228	231 - 359	10980				H0305: 2 and H0589: 2.	
HCWGE53	728249	1229	3 - 188	10981		His-1 to Trp-14.		H0305: 2	
HCWGE65	720349	1230	173 - 361	10982		Lys-41 to Pro-47.		H0305: 4	
HCWGE73	757333	1231	3 - 212	10983				H0305: 2	
HCWGE78	527557	1232	199 - 339	10984		Gln-2 to Gly-12.		H0305: 2	
HCWGE92	792722	1233	32 - 286	10985		Arg-9 to Ser-15, Thr-40 to Lys-47, Gly-58 to Asn-71, Gly-75 to Glu-85.	15q22	H0305: 2	102578, 109700, 151670, 154550, 601780
HCWGF06	935492	1234	28 - 282	10986		Arg-35 to Asn-47.		H0305: 4	
HCWGF71	960089	1235	208 - 402	10987		Gly-10 to Glu-34.		H0305: 5 and H0589: 1.	
HCWGF74	529235	1236	3 - 245	10988		Pro-1 to Arg-14.		H0305: 2	
HCWGF75	682351	1237	173 - 313	10989		Leu-34 to Arg-40.		H0305: 2 and H0589: 1.	
HCWGF76	752789	1238	3 - 296	10990		Glu-27 to Glu-32. Ser-26 to Arg-36, Leu-41 to Lys-49, Asn-54 to Lys-72.		H0305: 1 and H0589: 1.	
HCWGF91	754244	1239	43 - 153	10991		Lys-1 to Lys-7.		H0305: 2	
HCWGF92	861865	1240	94 - 306	10992		Ser-20 to Ser-27.		H0305: 4 and H0445: 1.	
HCWGO07	849889	1241	152 - 376	10993		Ser-53 to Ser-58.		H0305: 1 and H0589: 1.	
HCWGOQ39	849891	1242	407 - 538	10994		Asp-1 to Phe-9, Phe-13 to Ile-18.		H0305: 3 and H0589: 3.	
HCWGOQ62	916454	1243	18 - 362	10995		Lys-9 to Cys-17.		H0305: 3 and H0589: 1.	
HCWGO71	710828	1244	1 - 306	10996		Gly-1 to Gly-11.		H0305: 1 and H0589: 1.	
HCWGOQ80	529242	1245	92 - 239	10997		Lys-8 to Thr-16.		H0305: 3 and H0589: 2.	
HCWGO84	853106	1246	192 - 401	10998		Pro-36 to Arg-43.		H0305: 2	
HCWGR34	923577	1247	52 - 132	10999		Pro-22 to Ser-27.		H0305: 1 and H0589: 1.	
HCWGR43	734888	1248	183 - 314	11000				H0305: 3 and L0529: 1.	
HCWGR47	719518	1249	59 - 196	11001		Met-3 to Ser-13.		H0305: 2	

HCWGR48	690954	1250	83 - 181	11002	Asn-20 to Glu-36.	H0305: 2	
HCWGR69	849946	1251	28 - 366	11003	Gly-7 to Trp-13.	H0305: 3 and H0589: 2.	
HCWGR76	778293	1252	98 - 268	11004		H0305: 1 and H0264: 1.	
HCWGR88	736056	1253	21 - 182	11005		H0305: 3	
HCWGT45	913730	1254	378 - 551	11006	Ala-1 to Gln-14, His-35 to Asp-45.	L0748: 2, H0402: 1, H0305: 1, H0589: 1, L0040: 1 and L0519: 1.	
HCWGT49	527085	1255	19 - 207	11007		H0305: 3	
HCWGT66	531374	1256	45 - 311	11008	Arg-27 to Cys-32, Val-61 to Gly-66.	H0305: 3 and H0589: 1.	
HCWGU11	967064	1257	87 - 233	11009	Ala-8 to Cys-13, Asn-35 to Asp-49.	H0305: 2, L0761: 1 and L0779: 1.	
HCWGU49	674752	1258	61 - 240	11010	Gln-3 to Lys-11.	H0305: 4, H0589: 1, L0764: 1 and L0527: 1.	
HCWGU57	705637	1259	31 - 129	11011	Glu-15 to Arg-22, Glu-27 to Arg-32.	H0305: 2	
HCWGU86	666943	1260	126 - 287	11012	Asp-1 to Trp-15, Ser-23 to Phe-28.	H0305: 3	
HCWGW10	935865	1261	88 - 396	11013	Thr-48 to Gln-55.	H0305: 4 and H0589: 3.	
HCWGW12	964088	1262	262 - 387	11014	Ala-1 to Leu-7.	H0305: 4 and H0589: 1.	
HCWGW13	849911	1263	95 - 409	11015	Pro-58 to Leu-63.	H0305: 3	
HCWGW32	615553	1264	2 - 253	11016	Lys-31 to Asp-37.	H0305: 2 and S0053: 1.	
HCWGW63	745091	1265	1 - 69	11017	Ile-2 to Glu-9.	H0305: 2	
HCWGW80	742103	1266	1 - 165	11018	Leu-42 to Lys-47.	H0305: 2 and L0750: 1.	
HCWGW85	556369	1267	2 - 193	11019	Leu-7 to Gly-12.	H0305: 7 and H0589: 1.	
HCWGW86	785506	1268	13 - 162	11020	Glu-35 to Ser-46.	H0305: 2	
HCWGW95	958780	1269	2 - 292	11021		H0305: 1 and H0589: 1.	
HCWGX05	902512	1270	733 - 1089	11022	Pro-41 to Ala-49, Ser-58 to Ile-64, Ser-85 to Trp-91, Leu-105 to Lys-119.	AR050: 57, AR054: 55, AR051: 47 H0305: 4, H0589: 1, H0063: 1 and H0521: 1.	
	972300	9551	1691 - 2062	19303	Pro-18 to Gln-23, Phe-25 to Ser-34, Asn-58 to Asn-67.		

					Gln-74 to Gln-79, Arg-99 to Arg-114, Gly-118 to Phe-124.			
HCWGX23	720486	1271	2 - 235	11023	Ala-1 to Ala-16.	H0305: 2		
HCWGX41	849887	1272	2 - 184	11024	Lys-29 to Gly-35.	H0305: 3		
HCWGX58	920693	1273	2 - 241	11025	Thr-40 to Leu-48, Val-75 to Gln-80.	H0305: 6, S0114: 1, L0142: 1, L0520: 1 and L0599: 1. H0305: 2 and H0589: 1. H0305: 5 and H0589: 2.		
HCWGX68	733413	1274	40 - 129	11026		H0305: 2		
HCWGX82	924102	1275	109 - 237	11027		H0305: 4		
HCWGX94	793197	1276	32 - 184	11028		H0305: 5		
HCWGY02	920113	1277	2 - 361	11029		H0305: 3		
HCWGY03	924208	1278	260 - 87	11030	Lys-1 to Ala-12.	H0305: 2		
HCWGY12	970693	1279	1 - 258	11031		H0305: 2		
HCWGY20	669717	1280	155 - 310	11032		H0305: 3 and S0052: 1.		
HCWGY33	702441	1281	1 - 213	11033				
HCWGY43	660568	1282	138 - 242	11034				
HCWGY64	670896	1283	2 - 208	11035				
HCWGY67	861886	1284	1 - 312	11036				
HCWGY76	496402	1285	145 - 291	11037				
HCWGY85	917132	1286	2 - 352	11038				
HCWGY86	711312	1287	276 - 473	11039				
HCWGY90	960159	1288	3 - 203	11040				
HCWHIA03	924189	1289	1 - 150	11041				
HCWHIA09	968224	1290	2 - 148	11042				
HCWHIA10	961278	1291	178 - 390	11043				
HCWHAS5	731770	1292	52 - 156	11044				
HCWHAS6	733424	1293	63 - 173	11045				
HCWHAB4	733421	1294	41 - 301	11046				

HCWHB12	970688	1295	2 - 286	11047	His-49 to Asp-56, Lys-64 to Glu-71.	
HCWHB32	966508	1296	58 - 297	11048	Glu-7 to Asp-13, Glu-17 to Arg-25.	H0305: 6
HCWHB65	711437	1297	1 - 87	11049		H0305: 2 and H0589: 1.
HCWHB68	573571	1298	119 - 331	11050		H0305: 2
HCWHC01	849886	1299	67 - 231	11051		H0305: 4 and H0589: 1.
HCWHC26	950719	1300	61 - 252	11052		H0305: 2
HCWHC35	706508	1301	222 - 362	11053	Ala-12 to Gly-18, Ser-37 to Gly-48, Thr-22 to Glu-28.	H0305: 2
HCWHC37	706509	1302	1 - 312	11054		H0305: 2
HCWHC50	591202	1303	358 - 543	11055		H0305: 1 and H0589: 1.
HCWHC59	964852	1304	69 - 161	11056		H0305: 5
HCWHD07	953384	1305	2 - 337	11057	Lys-7 to Glu-18, Pro-38 to Thr-51.	H0305: 2 and H0589: 1.
HCWHD17	663865	1306	2 - 172	11058		H0305: 3
HCWHD23	934917	1307	129 - 227	11059	Lys-10 to Trp-15.	H0589: 2 and H0305: 1.
HCWHD68	690359	1308	111 - 335	11060		H0305: 3 and H0589: 1.
HCWHF62	582472	1309	1 - 207	11061	Pro-33 to Arg-43.	L0748: 3, H0305: 2 and H0589: 1.
HCWHF85	746745	1310	123 - 317	11062		H0305: 2
HCWHJ15	968379	1311	1 - 105	11063		H0305: 4
HCWHJ25	686712	1312	172 - 354	11064		H0305: 2
HCWHJ48	721816	1313	1 - 354	11065	Gly-1 to Thr-8, Pro-19 to Arg-25.	H0305: 2
HCWHJ53	693313	1314	135 - 425	11066	Phe-11 to Trp-16, Gly-30 to Lys-38, Ser-49 to Ala-57.	H0305: 2 and H0589: 2.
HCWHJ55	861884	1315	145 - 318	11067	Ser-43 to Leu-58.	H0305: 4
HCWHJ75	786019	1316	167 - 412	11068	Gly-32 to Gly-39, Trp-54 to Lys-65.	H0305: 2
HCWHJ91	674157	1317	103 - 345	11069	Glu-28 to Thr-36, Ala-59 to Arg-64.	H0305: 1 and H0589: 1.
HCWHL11	967057	1318	3 - 299	11070	Ala-1 to Val-13.	H0305: 3

HCWHL36	465250	1319	309 - 491	11071	Arg-25 to Lys-31.	H0305: 2, L0766: 1 and L0747: 1.	
HCWHL42	959894	1320	30 - 233	11072	Pro-10 to Cys-15, Gly-22 to Gln-27, Lys-54 to Arg-64, Glu-73 to Gly-81, Asp-89 to Ala-96, Trp-98 to Ser-104.	H0306: 2 and H0305: 2, H0305: 6 and L0589: 1.	
HCWHL73	960097	1321	3 - 407	11073			
HCWHL89	754087	1322	2 - 139	11074		H0305: 2	
HCWHN05	849885	1323	210 - 377	11075		H0305: 2, S0114: 1, H0402: 1 and H0444: 1.	
HCWHN28	529654	1324	70 - 330	11076		H0305: 2	
HCWHO38	573533	1325	169 - 426	11077	Pro-25 to Gly-36.	H0305: 3	
HCWHO45	717807	1326	34 - 288	11078	Gly-1 to Lys-13, Arg-47 to Ser-52, Gln-75 to Phe-85.	H0305: 1, H0589: 1 and S0428: 1.	
HCWHO78	960180	1327	77 - 208	11079	Ser-14 to Trp-26, Phe-39 to Tyr-44.	H0305: 3	
HCWHO93	924109	1328	2 - 169	11080		H0305: 3 and H0589: 1.	
HCWHP06	935483	1329	93 - 302	11081	Ser-25 to Ala-31.	H0305: 3 and H0402: 2.	
HCWHP25	881285	1330	19 - 474	11082		H0305: 6, L0748: 2 and L0528: 1.	
HCWHP40	577691	1331	228 - 395	11083		H0305: 5 and H0589: 1.	
HCWHP44	705392	1332	1 - 96	11084		H0305: 4 and L0749: 1.	
HCWHP70	711476	1333	163 - 303	11085	Pro-13 to Leu-22.	S0114: 1 and H0305: 1.	
HCWHP74	598510	1334	41 - 322	11086	Glu-1 to Glu-7, Phe-12 to Val-17, Gly-42 to Ser-49, Thr-52 to Thr-65.	H0305: 1 and H0589: 1.	
HCWHP84	849900	1335	3 - 164	11087		H0305: 2	
HCWHQ03	924187	1336	1 - 144	11088	Gly-1 to Ser-7, Gly-23 to Asn-28.	H0305: 4	
HCWHQ31	574945	1337	129 - 428	11089		AR089: 1, AR061: 1 H0305: 4	
HCWHQ82	677186	1338	292 - 429	11090		H0305: 2 and L0740: 1.	

HCWHR01	916526	1339	2 - 403	11091	Ser-16 to Ser-29, Leu-42 to Gln-50, Pro-76 to Gln-85.	H0305: 5	
HCWHR09	542336	1340	245 - 388	11092		H0305: 6 and H0589: 1.	
HCWHR59	739293	1341	195 - 572	11093		H0305: 2 and H0589: 1.	
HCWHR77	729850	1342	3 - 341	11094	Arg-1 to Thr-10, Pro-13 to Gly-25.	H0305: 3	
HCWHR81	935419	1343	71 - 277	11095	Val-1 to Thr-8, Thr-18 to Ser-23, Glu-47 to Pro-52.	AR089: 3, AR061: 1 H0305: 6	
HCWHS13	657230	1344	103 - 204	11096	Arg-26 to Pro-33.	H0305: 2	
HCWHS28	675051	1345	38 - 223	11097	Ser-34 to Gly-44.	H0305: 2	
HCWHS77	861875	1346	89 - 349	11098		H0305: 1 and H0589: 1.	
HCWHT50	527542	1347	75 - 305	11099	His-47 to Phe-53, Pro-59 to Ala-64.	H0305: 6	
HCWHT56	849979	1348	42 - 230	11100	Gln-24 to Val-31.	H0305: 3	
HCWHT59	924105	1349	106 - 333	11101		H0305: 3	
HCWHT22	849878	1350	63 - 329	11102		H0305: 3	
HCWHT30	974485	1351	75 - 404	11103	Ser-7 to Arg-14, Ser-16 to Ala-26, Pro-53 to Tyr-60.	H0305: 3	
HCWHT47	720340	1352	130 - 255	11104		H0305: 2	
HCWHT52	726054	1353	39 - 176	11105		H0305: 3	
HCWHT54	727314	1354	1 - 123	11106		H0305: 2	
HCWHT58	736052	1355	3 - 302	11107	Ser-3 to Ser-8, Gln-10 to Gln-17, Asp-24 to Asn-36, Pro-55 to Arg-69.	H0305: 2	
HCWHTV11	964996	1356	1 - 213	11108		H0305: 2	
HCWHTV18	466511	1357	145 - 342	11109		H0305: 3	
HCWHTV28	686710	1358	253 - 444	11110	Pro-14 to Gln-20.	H0305: 1, H0589: 1 and L0748: 1.	
HCWHTV33	702437	1359	3 - 200	11111		H0305: 1 and H0589: 1.	
HCWHTV41	960157	1360	175 - 345	11112	Gln-25 to Gln-33, Thr-41 to Arg-47.	H0305: 3 and H0589: 1.	
HCWHTV61	849983	1361	9 - 422	11113	Trp-1 to Arg-13.	H0305: 4	



HCWHV64	770049	1362	2 - 148	11114	Asp-9 to Ala-14.	H0305: 2 and L0745: 1.
HCWHV66	923527	1363	252 - 479	11115	Pro-3 to Tyr-8.	H0305: 1 and H0589: 1.
HCWHV71	917274	1364	269 - 502	11116	Gln-12 to Tyr-18, Lys-59 to Glu-68.	H0305: 3
HCWHV94	953379	1365	169 - 345	11117	Ser-5 to Ser-12.	H0305: 5
HCWHV32	861905	1366	236 - 559	11118		H0305: 3 and H0589: 1.
HCWHV38	722213	1367	2 - 232	11119	Arg-53 to Gly-59.	AR051: 12, AR050: 1 H0305: 3
	861870	9552	210 - 551	19304	Ala-1 to Gln-7, Lys-24 to Cys-34, Arg-90 to Gly-96.	
HCWHV83	841937	1368	26 - 220	11120	Trp-33 to Ser-38.	H0305: 5 and H0589: 1.
HCWHX08	959456	1369	3 - 209	11121	Arg-45 to Pro-50.	H0305: 1, H0589: 1 and L0369: 1.
HCWHX09	625596	1370	37 - 303	11122	Gly-1 to Cys-7, Tyr-28 to Ser-43.	H0589: 2 and H0305: 1.
HCWHX72	849884	1371	2 - 247	11123	Ala-1 to Gly-7, Gly-12 to Gly-19, Pro-21 to Lys-31.	H0305: 3 and L0599: 1.
HCWHX91	723178	1372	27 - 245	11124	Ala-45 to Arg-61.	H0305: 2
HCWHX95	736004	1373	4 - 117	11125	Gly-4 to Gln-14, Cys-33 to Lys-38.	H0305: 2
HCWHZ18	666452	1374	54 - 209	11126	Arg-11 to Phe-16.	H0305: 2, L0805: 1 and L0776: 1.
HCWHZ51	725682	1375	124 - 315	11127	Ser-1 to Ile-7, Thr-26 to Ser-32, Pro-42 to Trp-48.	H0305: 2
HCWHZ59	739294	1376	2 - 322	11128		H0305: 2
HCWHZ83	781186	1377	3 - 92	11129		H0305: 2
HCWHZ89	668670	1378	3 - 104	11130		H0305: 2
HCWKA13	494088	1379	580 - 374	11131		H0305: 5
	971148	9553	89 - 247	19305		
HCWKA21	670897	1380	129 - 266	11132	Gly-30 to Gln-36, Thr-38 to Pro-46.	H0305: 2
HCWKA28	466763	1381	99 - 272	11133	Glu-1 to Gln-8.	H0305: 2
HCWKA79	574911	1382	307 - 483	11134		H0305: 3

HCWK A96	963621	1383	203 - 355	11135	Thr-14 to Val-20, Lys-37 to Asn-48, Pro-50 to Ile-55.	H0305: 3, H0589: 1 and L0758: 1.	
HCWK B04	676904	1384	74 - 244	11136		L0776: 4, H0305: 2, H0589: 1, L0659: 1, L0438: 1 and L0756: 1.	
HCWK B10	964570	1385	202 - 408	11137	Pro-14 to Ser-30.	H0305: 3 and H0589: 2.	
HCWK C83	496385	1386	1 - 99	11138		H0305: 3	
HCWK D34	706520	1387	231 - 368	11139		H0305: 1 and H0589: 1.	
HCWK F08	959388	1388	* 1 - 216	11140		H0305: 1 and H0589: 1.	
HCWK F28	686655	1389	155 - 340	11141	Pro-15 to Gly-21, Pro-23 to Cys-28, Leu-40 to Asn-48.	H0305: 2	
HCWK F29	779862	1390	55 - 207	11142		H0305: 2	
HCWK G10	964577	1391	3 - 134	11143		H0305: 1 and H0589: 1.	
HCWK H08	959381	1392	71 - 310	11144	Arg-1 to Asp-9.	H0305: 1 and H0589: 1.	
HCWK H16	661898	1393	290 - 382	11145	Asn-1 to Trp-7.	H0305: 1 and H0589: 1.	
HCWK H25	678086	1394	146 - 307	11146		H0305: 2	
HCWK H36	924191	1395	102 - 206	11147		H0305: 3	
HCWK I31	678375	1396	1 - 75	11148		H0305: 2	
HCWK I77	920043	1397	347 - 457	11149		H0305: 2 and H0589: 2.	
HCWK I92	792689	1398	154 - 480	11150		H0305: 4	
HCWK J23	934393	1399	323 - 478	11151		H0305: 2 and H0589: 2.	
HCWK J40	861851	1400	233 - 409	11152	Leu-5 to Gln-12, Ser-34 to Lys-40.	H0305: 2	
HCWK J60	968112	1401	102 - 365	11153	Gly-7 to Ile-13.	H0305: 6	
HCWK J96	571302	1402	88 - 249	11154	Cys-16 to Cys-22, Lys-32 to Arg-42.	H0305: 6	
HCWK M28	849915	1403	1 - 357	11155		H0305: 4	
HCWK M31	697974	1404	2 - 169	11156	Ala-6 to Pro-12.	H0305: 2	
HCWK M58	849934	1405	10 - 246	11157		H0305: 4 and H0589: 1.	
HCWK M60	740347	1406	12 - 143	11158		H0305: 2 and S0052: 1.	
HCWK M88	792086	1407	20 - 148	11159	Met-5 to Asn-12.	H0305: 1 and H0589: 1.	
HCWK M90	960177	1408	152 - 310	11160	Leu-9 to Cys-18.	H0305: 5	
HCWK N08	959380	1409	24 - 284	11161	Pro-27 to Asn-34, Asn-48 to Leu-57.	H0305: 2	

HCWKN57	861537	1410	310 - 2	11162	Ser-13 to Pro-36, Thr-79 to Ser-89.	H0305: 3	
HCWKQ51	959684	1411	330 - 494	11163	Thr-17 to Thr-27.	H0305: 2 and L0599: 1.	
HCWKQ82	827083	1412	2 - 217	11164	Cys-49 to Ala-54.	H0305: 6	
HCWKP03	924104	1413	95 - 331	11165	Glu-9 to Pro-15, Glu-17 to Asp-24, Gly-46 to Lys-67.	H0305: 4	
HCWKP51	725653	1414	1 - 270	11166	Pro-15 to Arg-20.	H0305: 2	
HCWKP53	664923	1415	202 - 309	11167		H0305: 2	
HCWKP56	849861	1416	1 - 342	11168	Glu-1 to Ser-11, Ser-75 to Leu-81, Ser-86 to Thr-91.	H0305: 3 and H0589: 1.	
HCWKP63	732447	1417	79 - 246	11169	Lys-1 to Leu-27, Ser-29 to Lys-44, Arg-50 to His-55.	H0305: 2 and H0589: 1.	
HCWKQ31	849851	1418	108 - 326	11170	Glu-68 to Arg-73.	H0305: 2	
HCWKQ55	706487	1419	116 - 214	11171		H0305: 2 and H0589: 1.	
HCWKR13	917268	1420	323 - 153	11172		H0305: 5	
HCWKR80	527074	1421	30 - 398	11173		H0305: 4 and H0589: 1.	
HCWKS13	657194	1422	26 - 232	11174	Glu-1 to Cys-6.	H0305: 2, L0803: 1 and L0779: 1.	
HCWKT11	966989	1423	44 - 193	11175	Gly-36 to Thr-47.	H0305: 2	
HCWKI43	659539	1424	2 - 244	11176		H0305: 2	
HCWKI57	881629	1425	19 - 267	11177		H0305: 2	
HCWKT63	849944	1426	301 - 429	11178		H0305: 4	
HCWKV68	959801	1427	1 - 243	11179		H0305: 2	
HCWKV77	527554	1428	265 - 402	11180	Ser-9 to Glu-15.	H0305: 2	
HCWKV85	932540	1429	2 - 202	11181	Asp-8 to Cys-15.	H0305: 3	
HCWKN13	466512	1430	173 - 337	11182		S0114: 1 and H0305: 1.	
HCWKN61	676895	1431	18 - 164	11183	Phe-42 to Gly-47.	H0305: 4 and H0589: 2.	
HCWKN68	725014	1432	57 - 203	11184	Pro-33 to Thr-39.	H0305: 2	
HCWKN77	772163	1433	143 - 418	11185		H0589: 2 and H0305: 1.	
HCWKN81	724873	1434	132 - 368	11186		H0305: 3	
HCWLA68	665744	1435	3 - 161	11187	Val-12 to Cys-18, Arg-23 to Gly-29.	H0305: 1 and H0589: 1.	

HCWLD01	916439	1436	2 - 367	11188		L0655: 2, H0305: 1, H0581: 1, T0041: 1 and L0767: 1.
HCWLD06	93592	1437	2 - 331	11189		H0305: 3 and H0589: 1.
HCWLD30	933118	1438	264 - 133	11190	Leu-13 to Thr-27.	H0305: 1 and H0022: 1.
HCWLD83	728219	1439	58 - 318	11191	Val-2 to His-11.	H0305: 2
HCWLE11	880982	1440	57 - 413	11192	Glu-38 to Gly-46, Phe-79 to Phe-88, Ser-104 to Gly-112.	H0305: 6, H0402: 1 and L0659: 1.
HCWLE34	576816	1441	218 - 385	11193		H0305: 2
HCWLE37	960093	1442	20 - 412	11194	Ala-12 to Cys-23, Trp-30 to Gly-38, Pro-41 to Gly-48, Pro-51 to Gly-62, Gly-95 to Ser-105.	H0305: 2
HCWLE46	719247	1443	76 - 528	11195	Ser-3 to His-8, Tyr-11 to Gly-28.	H0305: 4
HCWLE57	764189	1444	33 - 227	11196	Glu-43 to Ser-52.	H0305: 2 and H0589: 1.
HCWLE64	745863	1445	121 - 312	11197	Pro-10 to Arg-17, Gln-40 to Gly-50.	H0305: 2 and H0589: 1.
HCWLE95	684331	1446	21 - 188	11198		H0305: 2
HCWLH02	853014	1447	332 - 553	11199	Asp-1 to Pro-9, Ser-35 to Gln-43, His-63 to Gln-68, Gly-10 to Arg-17.	H0305: 1 and H0589: 1.
HCWLH09	919329	9554	279 - 64	19306		H0305: 2
HCWLH20	625558	1448	300 - 530	11200		H0305: 3
HCWLH42	520356	1449	1 - 282	11201		H0305: 4
HCWLH42	954875	1450	671 - 435	11202		H0305: 4
HCWLH75	670202	1451	99 - 245	11203	Val-28 to Ala-34.	H0305: 4
HCWLH78	935908	1452	148 - 366	11204		H0305: 4
HCWLH79	959458	1453	226 - 447	11205	Pro-14 to His-22, Pro-31 to Gln-39.	H0305: 6
HCWLH80	577886	1454	10 - 270	11206	Asn-2 to Thr-8, Ser-23 to Gly-35.	H0305: 4
HCWSB09	923573	1455	99 - 239	11207	Gly-24 to Lys-33.	H0305: 1 and H0589: 1.
HCWSB30	771897	1456	285 - 500	11208		H0305: 2 and H0589: 1.
HCWSB65	728360	1457	36 - 182	11209	Gln-9 to Trp-18.	H0305: 2

HCWTA02	919258	1458	65 - 223	11210		H0589: 2		
HCWTA59	531422	1459	18 - 146	11211	Glu-32 to Gln-38.	H0305: 3 and H0589: 1.		
HCWTB01	861850	1460	188 - 358	11212		S0116: 1, H0305: 1 and H0589: 1.		
HCWTB08	920509	1461	60 - 203	11213		H0305: 1 and H0589: 1.		
HCWTB11	965024	1462	3 - 299	11214	His-7 to Ala-14, Arg-42 to Arg-51, Glu-56 to Asp-61.	H0305: 2 and H0589: 2.		
HCWTB13	861029	1463	168 - 296	11215	Glu-6 to Arg-15.	H0305: 4, H0589: 1 and H0179: 1.		
HCWTB14	657621	1464	2 - 328	11216		H0305: 2 and H0589: 1.		
HCWTB25	677748	1465	3 - 236	11217	Glu-11 to Tyr-23, Arg-37 to Phe-44, Arg-66 to Arg-78.	H0589: 2		
HCWTB31	697615	1466	14 - 436	11218		H0305: 1 and H0589: 1.		
HCWTB33	702129	1467	138 - 350	11219		H0305: 1 and H0589: 1.		
HCWTB36	529499	1468	1 - 210	11220		H0305: 2 and H0589: 1.		
HCWTB38	732440	1469	1 - 309	11221	Pro-1 to Asp-6, Asp-24 to Pro-30.	H0589: 2 and H0305: 1.		
HCWTB56	853009	1470	2 - 346	11222		AR061: 5, AR089: 4 H0305: 2 and H0589: 1.		
HCWTB65	861848	1471	2 - 175	11223	Thr-1 to Asp-8, Arg-28 to Leu-34.	H0305: 1 and H0589: 1.		
HCWTB77	771887	1472	317 - 448	11224		H0589: 2		
HCWTB83	730832	1473	23 - 283	11225	Asp-5 to Thr-20.	H0305: 2 and H0589: 1.		
HCWTF05	849954	1474	1 - 318	11226	Trp-5 to Trp-17, Gly-30 to Lys-36.	H0305: 2 and H0589: 1.		
HCWTF11	966513	1475	346 - 621	11227		H0589: 2, S0114: 1 and H0305: 1.		
HCWTF19	668358	1476	3 - 149	11228	Met-32 to Lys-39.	H0589: 2 and H0305: 1.		
HCWTF72	760898	1477	189 - 362	11229	Asn-16 to Arg-26, Arg-37 to Gly-46.	H0589: 2 and H0305: 1.		
HCWTF01	915863	1478	2 - 175	11230	Thr-21 to Val-26, Lys-28 to Lys-36.	H0589: 3 and H0305: 2.		
HCWTFG15	659860	1479	105 - 248	11231	Ser-21 to Thr-27.	H0589: 2		
HCWTFG26	681271	1480	348 - 476	11232		H0305: 1 and H0589: 1.		

HCWTG30	954379	1481	84 - 197	11233	Leu-1 to Leu-7.	H0589: 4 and H0305: 3.
HCWTG44	657911	1482	366 - 572	11234		H0589: 3
HCWTG45	662482	1483	217 - 384	11235	Lys-34 to Leu-39.	H0589: 3
HCWTG60	740078	1484	167 - 379	11236	Tyr-8 to Ser-14.	H0305: 1 and H0589: 1.
HCWTG66	754823	1485	79 - 249	11237	Tyr-19 to Val-24.	H0589: 2
HCWTG77	924107	1486	185 - 304	11238	Asn-16 to Gly-25.	H0589: 5 and H0305: 4.
HCWTG81	773341	1487	104 - 334	11239	Pro-61 to His-67.	H0589: 2
HCWTI25	669935	1488	118 - 345	11240	Gln-56 to Arg-63. Ala-65 to Leu-74.	H0589: 2 and H0305: 1.
HCWTI33	701757	1489	192 - 323	11241	Ser-27 to Phe-34.	H0305: 1 and H0589: 1.
HCWTI38	576883	1490	60 - 293	11242	Ser-4 to Gln-15.	H0305: 2 and H0589: 1.
HCWTI44	689971	1491	82 - 225	11243	Thr-16 to Asn-21. Tyr-32 to Arg-37.	H0589: 2
HCWTI47	720023	1492	163 - 279	11244		H0589: 2
HCWTI54	723080	1493	108 - 188	11245		H0305: 1 and H0589: 1.
HCWTJ01	915878	1494	1 - 336	11246	Ala-17 to Ser-32.	H0305: 1 and H0589: 1.
HCWTJ50	724072	1495	42 - 257	11247	Ser-1 to Lys-18. Ser-40 to Arg-51.	H0589: 2
HCWTL24	676906	1496	221 - 325	11248		H0305: 1 and H0589: 1.
HCWTL25	598511	1497	165 - 329	11249		H0305: 1 and H0589: 1.
HCWTL51	725482	1498	64 - 267	11250	Trp-4 to Gly-10. His-42 to Cys-50. Ser-53 to Gly-63.	H0589: 2
HCWTL52	573539	1499	36 - 293	11251	Gln-18 to Leu-27. Gly-35 to Gln-40. Pro-46 to Thr-51. Arg-67 to Ser-76.	H0305: 2 and H0589: 1.
HCWTL58	697623	1500	111 - 278	11252	Ile-1 to Arg-7. Leu-46 to Gln-51.	H0589: 2
HCWTL69	960597	1501	188 - 454	11253	Pro-18 to Ser-25. Leu-42 to Arg-53.	H0589: 2
HCWTL78	760707	1502	160 - 231	11254		H0305: 1 and H0589: 1.
HCWTL85	836155	1503	1 - 153	11255	Asn-18 to Lys-23. Thr-1 to Thr-11.	H0589: 2
HCWTM16	661569	1504	2 - 391	11256	Asp-59 to Gln-64.	H0305: 1, H0589: 1, H0581: 1 and L0565: 1.

HCWTO06	934912	1505	16 - 360	11257	Thr-90 to Thr-101. Cys-20 to His-27, Thr-34 to Ser-63, Arg-72 to Gly-78, Leu-89 to Met-99.	H0589: 2	
HCWTO29	660457	1506	2 - 277	11258	Leu-16 to Leu-24.	H0305: 1 and H0589: 1.	
HCWTO35	706525	1507	159 - 302	11259	Leu-1 to Ser-6, Ser-10 to Leu-17, Pro-43 to Arg-48.	H0589: 2	
HCWTO52	726444	1508	54 - 233	11260		H0305: 1, H0589: 1, L0667: 1 and L0752: 1.	
HCWTO60	681257	1509	2 - 205	11261		H0589: 2	
HCWTP13	656678	1510	78 - 311	11262	Arg-58 to Ser-67.	H0589: 2	
HCWTP22	674158	1511	182 - 370	11263		H0305: 1 and H0589: 1.	
HCWTP76	731438	1512	110 - 328	11264		H0589: 2	
HCWTP77	529346	1513	23 - 343	11265		H0305: 2 and H0589: 1.	
HCWTP90	788663	1514	205 - 393	11266	Ser-8 to Arg-13, Lys-19 to Ser-29.	H0589: 2	
HCWTP91	661551	1515	179 - 394	11267		H0589: 2, L0438: 2 and H0265: 1.	126650, 126650, 164860, 180105, 222800, 246900, 274600, 274600, 602081
HCWTR08	958791	1516	3 - 191	11268		H0305: 5 and H0589: 2.	
HCWTR54	729290	1517	49 - 240	11269	Ser-37 to Gly-44.	AR089: 6, AR061: 2 H0589: 2	
HCWTR77	659506	1518	1 - 198	11270	Leu-1 to His-8.	H0589: 4 and H0305: 1. AR061: 5, AR089: 1	
HCWTS15	654317	1519	2 - 223	11271		H0305: 1 and H0589: 1. H0305: 1 and H0589: 1.	
HCWTS84	660926	1520	98 - 292	11272		H0589: 2	
HCWTT20	669430	1521	335 - 436	11273		H0305: 2 and H0589: 2.	
HCWTT45	576720	1522	148 - 315	11274	Leu-10 to Tyr-16, Glu-24 to Ala-31.		
HCWTT47	706527	1523	188 - 355	11275		H0589: 2	
HCWTT63	542409	1524	1 - 210	11276	Lys-7 to Leu-15, Gly-31 to Arg-36.	H0305: 5 and H0589: 2.	

HCWT181	712302	1525	110 - 247	11277	Glu-60 to Asp-67. Glu-1 to Lys-9, His-18 to Gly-23, Glu-31 to Lys-36.	H0305: 1 and H0589: 1.	
HCWT189	786693	1526	224 - 331	11278		H0305: 1 and H0589: 1.	
HCWTU12	934902	1527	102 - 308	11279		H0305: 2 and H0589: 2.	
HCWTU83	780917	1528	13 - 183	11280	Arg-8 to Met-13, Glu-35 to Lys-52.	H0589: 2	
HCWTU84	666642	1529	30 - 167	11281	Ser-1 to Ser-6.	H0305: 2 and H0589: 1.	
HCWTU17	725862	1530	232 - 429	11282		H0305: 1 and H0589: 1.	
HCWTU62	742696	1531	135 - 401	11283		AR051: 9, AR054: 8, AR050: 8 H0305: 3 and H0589: 1.	
HCWTU73	574912	1532	187 - 474	11284	Ser-48 to Pro-55, Ala-62 to Asp-72, Lys-84 to Ile-90.	H0305: 2 and H0589: 1.	
HCWTU88	861846	1533	2 - 322	11285	Gly-38 to Leu-43, Pro-56 to Ile-61, Glu-64 to Pro-73, Thr-86 to Arg-93.	H0305: 1 and H0589: 1.	
HCWUA19	668355	1534	167 - 406	11286	Met-41 to Gly-55.	H0589: 2 and H0305: 1.	
HCWUA23	577964	1535	52 - 276	11287	Ala-18 to Gly-28, Trp-45 to Pro-51.	H0589: 2 and H0305: 1.	
HCWUA43	715000	1536	3 - 164	11288	Gly-16 to Ala-22.	H0589: 2	
HCWUA90	706532	1537	4 - 156	11289	Pro-33 to Asn-40.	H0589: 2	
HCWUB03	923536	1538	38 - 304	11290		H0305: 1 and H0589: 1.	
HCWUB08	958770	1539	5 - 130	11291	Val-9 to Gly-21.	H0589: 2	
HCWUB74	765274	1540	131 - 358	11292		H0305: 2 and H0589: 1.	
HCWUB83	853008	1541	44 - 280	11293	Pro-37 to Lys-48, Lys-57 to Ser-62.	H0305: 3, H0254: 1, H0589: 1, H0445: 1 and H0543: 1.	
HCWUC39	572977	1542	1 - 312	11294	Gly-29 to Ile-37.	H0305: 3 and H0589: 1.	
HCWUC64	588122	1543	156 - 314	11295	Gly-27 to Lys-33.	H0589: 1 and H0542: 1.	
HCWUC94	721663	1544	3 - 500	11296	Gln-12 to Pro-29, Gly-35 to Gln-50, Leu-55 to Thr-61, Asn-70 to Cys-89.	H0305: 1 and H0589: 1.	



HCWUD64	746332	1545	197 - 361	11297	Pro-91 to Gln-96.	H0305: 1 and H0589: 1.	
HCWUD83	827340	1546	215 - 442	11298	Leu-26 to Ser-31.	H0305: 1 and H0589: 1.	
HCWUD85	529221	1547	1 - 126	11299	Phe-8 to Lys-15.	H0305: 2 and H0589: 1.	
HCWUD93	574856	1548	3 - 314	11300	Ser-6 to Gly-24, Ser-38 to Asn-43, Pro-53 to Gly-58, Gly-60 to Gln-68, Gly-79 to Glu-85, Leu-93 to Lys-101.	H0305: 2 and H0589: 1.	
HCWUF05	849929	1549	47 - 226	11301	Tyr-11 to Thr-20, Tyr-27 to Ala-40.	H0305: 1 and H0589: 1.	
HCWUF30	691734	1550	112 - 405	11302	Leu-9 to Ser-15, Asn-41 to Asn-50, Gln-57 to Glu-62, Arg-82 to Arg-97.	H0305: 1 and H0589: 1.	
HCWUF40	703804	1551	25 - 168	11303	Pro-4 to Glu-12.	H0589: 2	
HCWUF46	656680	1552	2 - 211	11304	Ser-61 to Trp-70.	H0589: 2	
HCWUF54	933212	1553	54 - 167	11305	Thr-12 to Asp-19.	H0305: 1 and H0589: 1.	
HCWUF84	686711	1554	88 - 174	11306	Glu-28 to Ser-36.	H0305: 1 and H0589: 1.	
HCWUG43	697616	1555	16 - 261	11307	Ala-31 to Cys-36.	H0589: 2	
HCWUG59	573548	1556	167 - 409	11308		H0305: 2, H0589: 1 and H0581: 1.	104770, 107670, 110700, 145001, 146760, 146790, 159001, 191315, 600897, 601412, 601652, 601863, 602491
HCWUG93	920882	1557	1 - 243	11309	Thr-43 to Glu-50, Ala-52 to Trp-57, Gly-63 to Asn-71.	H0305: 1 and H0589: 1.	
HCWUH17	662478	1558	87 - 293	11310	Pro-18 to Tyr-23, Ala-57 to Leu-65.	H0305: 5, H0589: 3, L0748: 3, H0402: 1, L0518: 1, L0809: 1 and H0445: 1.	
HCWUH25	677747	1559	130 - 333	11311		H0305: 1 and H0589: 1.	

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HCWUR83	958776	1583	392 - 258	11335	Ser-56 to Ile-63, Asp-77 to His-85.	H0589: 2 and L0769: 1.	
HCWUR95	711186	1584	12 - 326	11336	Thr-8 to Lys-15, Gly-17 to Lys-26, Thr-84 to Asp-90.	H0305: 1 and H0589: 1.	
HCWUS02	919724	1585	37 - 132	11337	Gln-13 to Ser-25.	H0589: 1 and H0318: 1.	
HCWUS29	690351	1586	50 - 211	11338	Ser-1 to Cys-14.	H0589: 1, S0426: 1 and L0362: 1.	
HCWUS63	542230	1587	2 - 457	11339	Pro-6 to Asn-16, Pro-21 to Tyr-31, Pro-49 to Gln-55, Asp-61 to Gly-66, Gln-78 to Cys-87.	H0305: 2, H0589: 2 and H0635: 1.	
HCWUS72	855815	1588	52 - 330	11340	Arg-5 to Ala-12, Ser-15 to Val-20, Pro-35 to Ala-44, Thr-70 to Lys-79.	H0589: 1 and S0002: 1.	
HCWUT24	676902	1589	242 - 400	11341	Asp-4 to Gln-9.	H0589: 2	
HCWUT46	861836	1590	3 - 239	11342	Thr-9 to Lys-18.	H0305: 4, H0589: 1 and L0601: 1.	
HCWUU04	614859	1591	179 - 361	11343		H0305: 2 and H0589: 1.	
HCWUU07	861959	1592	166 - 510	11344	Ala-58 to Leu-63.	H0305: 1 and H0589: 1.	
HCWUU16	661570	1593	3 - 203	11345		H0305: 1 and H0589: 1.	
HCWUU58	735736	1594	3 - 107	11346		S0218: 1 and H0589: 1.	
HCWUU78	574908	1595	202 - 447	11347	Asp-26 to Asn-32.	H0305: 2 and H0589: 1.	
HCWUV17	662485	1596	150 - 353	11348	Leu-27 to Thr-33.	H0305: 4 and H0589: 1.	
HCWUV24	676909	1597	3 - 167	11349	Lys-1 to Arg-13, Leu-36 to Pro-41.	H0589: 2	
HCWUV28	686171	1598	2 - 193	11350	Gln-59 to Gly-64.	H0589: 1 and S0052: 1.	
HCWUV65	676334	1599	1 - 192	11351	His-15 to Ser-30, Pro-38 to Ser-43, Arg-46 to Asp-52.	H0305: 1 and H0589: 1.	
HCWUV76	615554	1600	97 - 225	11352	Gln-3 to Gln-14.	H0305: 1 and H0589: 1.	
HCWUW01	915860	1601	367 - 507	11353		H0589: 2	
HCWUW04	614844	1602	3 - 281	11354	Arg-42 to Gly-48.	H0305: 4 and H0589: 2.	

HCWUW55	964086	1603	3 - 143	11355	Gln-57 to Ser-64, Lys-1 to Trp-8, Met-22 to Gly-29, Ile-40 to His-46.	H0589: 2		
HCWUW58	694016	1604	1 - 279	11356		H0305: 1 and H0589: 1.		
HCWUW69	882383	1605	230 - 391	11357		H0305: 1 and H0589: 1.		
HCWUW76	769808	1606	2 - 514	11358		H0305: 1 and H0589: 1.		
HCWUW84	782840	1607	92 - 238	11359	Gly-20 to Val-25, Pro-32 to Asp-41.	S0114: 1 and H0589: 1.		
HCWUW90	712303	1608	31 - 183	11360	Ile-1 to His-6.	H0305: 2 and H0589: 1.		
HCWUW95	706528	1609	4 - 204	11361	Met-21 to Gln-27, Arg-38 to Phe-44.	H0589: 2		
HCWUX02	852993	1610	272 - 466	11362	Cys-3 to Thr-9.	H0589: 2		
HCWUX25	614857	1611	269 - 418	11363	Trp-9 to Cys-14.	H0402: 1, H0589: 1, L0748: 1 and L0749: 1.		
HCWUX78	773336	1612	35 - 214	11364		H0305: 1 and H0589: 1.		
HCWUY16	661550	1613	266 - 541	11365	Arg-18 to Lys-24.	L0748: 4, H0305: 2 and H0589: 1.		
HCWUY19	922920	1614	482 - 913	11366	Ala-2 to Gly-12.	H0305: 1 and H0589: 1.		
HCWUY26	681249	1615	66 - 158	11367		H0589: 2		
HCWUY41	711771	1616	3 - 149	11368	Lys-1 to Lys-7.	H0589: 2		
HCWUY69	615630	1617	487 - 32	11369		H0305: 1 and H0589: 1.		
HCWVA18	849894	1618	1 - 312	11370	Ser-19 to Ala-27.	H0305: 3, H0589: 1 and L0769: 1.		
HCWVA25	754314	1619	10 - 159	11371		H0589: 2		
HCWVA44	716347	1620	1 - 135	11372		H0305: 1 and H0589: 1.		
HCWVF94	793533	1621	190 - 303	11373		H0305: 1, H0589: 1 and L0748: 1.		
HCWVWH59	770274	1622	139 - 450	11374	Thr-1 to Arg-14, Gln-29 to Ile-37, Thr-43 to Cys-48.	H0305: 1 and H0589: 1.		
HCWVWH65	747324	1623	22 - 162	11375	Arg-6 to Ser-11.	H0589: 2 and H0305: 1.		
HCWVWH67	772342	1624	158 - 340	11376	Pro-20 to Leu-33, Pro-43 to Ser-48.	H0305: 2 and H0589: 1.		
HCWVWH69	861830	1625	2 - 319	11377	Phe-14 to Pro-21.	H0589: 3		

HDCAC05	975255	1626	2 - 178	11378	Pro-6 to Ser-20, Cys-23 to Thr-33, Glu-43 to Gly-49.	H0637: 3		
HDCAD10	963330	1627	141 - 440	11379	Pro-19 to Arg-27, Thr-58 to Trp-72.	H0637: 2		
HDCAG86	852970	1628	2 - 190	11380	Ser-8 to Val-14, His-34 to Phe-41.	H0637: 2		
HDCAP64	922818	1629	173 - 313	11381		H0637: 2		
HDCAV79	881404	1630	1 - 432	11382		H0637: 1 and S0052: 1.		
HDCAY54	959750	1631	1 - 366	11383		H0637: 1 and S0052: 1.		
HDCBO38	961931	1632	56 - 226	11384	Glu-33 to Thr-40.	H0637: 2		
HDDMA83	926991	1633	2 - 571	11385	Glu-1 to Gly-13, Tyr-35 to Arg-42, Glu-95 to His-103, Leu-113 to Gly-119, Ala-139 to Glu-144.	H0641: 1 and H0521: 1.		
HDDNY79	933804	1634	3 - 455	11386	Asn-77 to Ser-82, Pro-112 to Ile-118.	H0637: 1 and H0641: 1.		
HDDOC53	934157	1635	742 - 509	11387	Tyr-16 to Gly-22, Pro-40 to Glu-45, Pro-70 to Gly-78.	S0002: 2, L0770: 2, L0769: 2, L0766: 2, L0518: 2, L0783: 2, H0521: 2, L0777: 2, L0731: 2, H0556: 1, H0650: 1, H0657: 1, H0486: 1, L0053: 1, H0641: 1, S0426: 1, L0662: 1, L0775: 1, L0655: 1, L0665: 1, S0053: 1, H0659: 1, L0754: 1, L0779: 1, L0759: 1 and H0422: 1.		
HDLAC80	799887	1636	109 - 315	11388	Gly-44 to Gly-53, Leu-56 to Lys-61.	H0485: 2		
HDLAD61	775541	1637	1 - 372	11389	Thr-2 to Arg-14.	H0485: 2	15q22.3	151670, 600374, 601780
HDLAH25	796174	1638	118 - 336	11390		H0485: 2 and H0580: 1.		
HDLAK03	923285	1639	2 - 214	11391		H0485: 2		
HDLAN36	923478	1640	1 - 99	11392		H0485: 2		

HDLA027	787084	1641	66 - 188	11393	Lys-1 to Lys-10, Thr-22 to Glu-28, Arg-35 to Lys-41. Pro-1 to Thr-6.	H0485: 1 and H0090: 1.	
HDLAQ50	723854	1642	2 - 88	11394		H0485: 2 and L0803: 1.	
HDLAR24	943930	1643	78 - 230	11395		H0543: 2 and H0485: 1.	
HDLAV29	922276	1644	220 - 393	11396	Lys-1 to Lys-13.	S0116: 1, H0485: 1 and H0421: 1.	
HDLBB03	923286	1645	3 - 134	11397	Phe-10 to Arg-21.	H0485: 1 and H0090: 1.	
HDMAQ15	941282	1646	1147 - 152	11398		AR089: 55, AR061: 26 S0142: 2, H0657: 1, H0638: 1, S0278: 1, S0144: 1, S0344: 1, L0777: 1 and L0599: 1.	
HDMBH76	883212	1647	307 - 723	11399	Asp-14 to Gly-24, Gly-31 to Val-36, Glu-58 to Pro-69, Lys-83 to Gly-90, Leu-97 to Thr-103.	H0521: 2, H0638: 1 and L0365: 1.	
HDMBK12	968954	1648	40 - 246	11400		S0114: 1 and H0638: 1.	
HDPAA89	693445	1649	115 - 303	11401	Ser-12 to Gly-18, Ser-25 to Ser-30.	L0748: 3, H0354: 1, S0344: 1 and H0521: 1.	
HDPAB03	924124	1650	76 - 369	11402	Leu-5 to Thr-10, Arg-12 to Glu-19, Pro-41 to Cys-47, Pro-58 to Leu-70.	H0521: 2	
HDPAD22	674560	1651	2 - 205	11403	Arg-1 to Arg-6, Arg-17 to Pro-24.	H0416: 1, L0761: 1, L0766: 1 and H0521: 1.	
HDPAE86	709072	1652	59 - 328	11404	Tyr-41 to Gly-50.	L0748: 2, H0521: 1 and H0543: 1.	
HDPAF70	881626	1653	1 - 465	11405	Glu-37 to Gly-42, Gly-130 to Trp-136, Ser-138 to Glu-145.	H0521: 2	
HDPAG03	771636	1654	55 - 228	11406	Asp-1 to Ile-7, Arg-22 to Ile-32.	H0521: 5 and H0522: 1.	
HDPAG32	947832	1655	119 - 607	11407	Ser-14 to Met-19, Thr-125 to Arg-133.	AR089: 25, AR061: 8 H0521: 2, H0581: 1 and H0423: 1.	

HDPFAH10	969041	1656	530 - 144	11408	Pro-30 to Pro-37, Gln-43 to Lys-48, Lys-56 to Asp-74, Gln-76 to Gln-82, Thr-93 to Ala-101, Met-107 to Trp-117.	L0775: 3, L0748: 3, H0521: 2, L0749: 2, H0486: 1, H0069: 1, H0271: 1, H0560: 1, S0426: 1, L0655: 1, S0216: 1, H0423: 1 and H0422: 1.
HDPAAQ24	677179	1657	2 - 439	11409	Pro-5 to Pro-20, Thr-58 to Leu-63, Ala-71 to Arg-79, Ala-99 to Arg-105.	S0052: 1 and H0521: 1.
HDPAS40	860041	1658	261 - 581	11410	Asp-1 to Ala-6, Phe-34 to Asp-42, Ala-61 to Asp-67.	S0033: 1 and H0521: 1.
HDPAV74	916457	1659	1 - 330	11411	Pro-12 to Gly-19, Ser-33 to Ala-38.	H0521: 8
HDPAAZ46	719024	1660	252 - 446	11412		H0521: 2
HDPAZ73	756742	1661	308 - 460	11413		H0486: 1 and H0521: 1.
HDPBC24	760623	1662	1 - 228	11414		H0521: 2
HDPBD79	973367	1663	1 - 135	11415	Arg-35 to Lys-45.	H0341: 1 and H0521: 1.
HDPBJ94	945460	1664	360 - 710	11416	Thr-22 to Tyr-35, Ala-84 to Ser-91.	AR061: 2, AR089: 2 S0116: 1, L0768: 1, L0656: 1, H0521: 1, L0070: 1, L0439: 1 and L0779: 1.
HDPBM64	972094	9555	783 - 502	19307		
HDPBO71	773091	1665	182 - 352	11417	Phe-15 to Ile-22.	H0341: 1, H0521: 1 and L0595: 1.
HDPBS54	883109	1666	3 - 203	11418		AR051: 35, AR054: 16, AR050: 13 H0641: 1 and H0521: 1.
HDPBW10	904762	1667	1145 - 1351	11419	Thr-28 to Pro-36, Ala-43 to Thr-49.	H0521: 9, L0595: 2, H0522: 1, L0593: 1 and L0594: 1.
HDPBW26	909915	9556	177 - 341	19308		
HDPBW82	964553	1668	1 - 231	11420	Arg-61 to Phe-68.	H0521: 2 and H0522: 1.
HDPBX82	670345	1669	3 - 137	11421	Val-23 to Pro-45.	H0581: 1 and H0521: 1.
HDPBY23	779848	1670	301 - 453	11422		H0521: 2 and L0803: 1.
	858345	1671	27 - 272	11423	Gln-74 to His-82.	L0509: 2, L0005: 1, H0179: 1.

HDPC48	709005	1672	56 - 304	11424	Asp-1 to Leu-12, Leu-21 to Gly-28, Trp-35 to Gly-43, Arg-52 to Gly-61.	1, H0521: 1, L0749: 1 and H0542: 1.		
HDPC46	950716	1673	249 - 371	11425		L0766: 1, H0521: 1 and H0444: 1.		
HDPC27	683383	1674	151 - 462	11426	Ala-9 to Ala-15, Ser-21 to Arg-35, Thr-60 to Pro-65.	H0521: 3		
HDPC66	766231	1675	192 - 392	11427	Ser-20 to Trp-30.	H0264: 1 and H0521: 1.		
HDPCM35	973352	1676	1 - 468	11428	Ser-32 to Thr-40, Pro-43 to Trp-48.	H0521: 2		
HDPCN22	927838	1677	2 - 622	11429	Glu-1 to Leu-7, Ser-31 to Glu-54, Lys-67 to Val-73, Lys-88 to Ser-103, Lys-110 to Phe-115, Val-122 to Glu-137, Gly-139 to Lys-154, Glu-167 to Asp-173, Glu-175 to Met-183.	H0264: 1, H0521: 1 and L0748: 1.		
HDPCN94	794275	1678	3 - 767	11430		AR089: 5, AR061: 2 H0521: 2	6q25	180020, 600320, 600883
HDPCR34	852871	1679	339 - 190	11431	Pro-1 to Val-12.	H0521: 2 and H0179: 1.		
HDPCS43	714479	1680	3 - 311	11432		H0179: 1 and H0521: 1.		
HDPCV60	720278	1681	282 - 512	11433		L0754: 6, L0747: 4, H0521: 3, L0748: 2, S0002: 1 and L0749: 1.		
HDPCW90	612234	1682	8 - 439	11434	Ser-70 to Ala-80.	H0542: 3, H0090: 2, H0522: 2, H0556: 1, H0141: 1, S0002: 1 and H0521: 1.		
HDPCY03	924057	1683	24 - 356	11435	His-21 to Arg-28, Pro-64 to Thr-70, Pro-99 to Ala-104.	H0521: 2		



HDPCY43	958157	1684	228 - 383	11436	His-1 to Gln-16, Tyr-27 to Lys-32.	H0370: 1 and H0521: 1.	
HDPCY93	571375	1685	83 - 394	11437		S0134: 2, S014: 1, H0521: 1 and L0740: 1.	
HDPD178	773556	1686	2 - 346	11438		H0521: 2	
HDPD124	677166	1687	173 - 361	11439	Gln-1 to Gln-10, Asp-15 to Ala-24.	H0521: 2 and L0748: 1.	
HDPDJ90	7735027	1688	227 - 454	11440	Ser-6 to Cys-21, Ser-30 to Ser-44.	H0264: 1 and H0521: 1.	
HDPD162	691647	1689	239 - 415	11441	Asp-1 to Arg-7.	H0521: 2, H0580: 1 and L0518: 1.	
HDPD179	774943	1690	269 - 583	11442	Lys-7 to Ser-12, Pro-24 to Thr-30.	H0521: 2	
HDPDN08	959332	1691	283 - 939	11443	Ile-30 to Pro-35, Thr-68 to Asn-77, Pro-87 to Gln-93, Gly-142 to Leu-149.	H0521: 1 and H0542: 1.	
HDPDO46	719010	1692	166 - 417	11444	Pro-11 to Arg-18.	H0521: 1 and H0522: 1.	
HDPCF15	745045	1693	15 - 209	11445	Ser-2 to Arg-12.	H0521: 2	
HDPPF07	974494	1694	178 - 513	11446	Ala-1 to Gln-21, Gly-27 to Gly-32, Gln-34 to Gly-42, Ala-55 to Ala-63, Asp-74 to Gly-81, Gln-98 to Gly-105.	H0521: 4	
HDPEI21	852824	1695	3 - 140	11447		H0318: 1 and H0521: 1.	
HDPEQ93	772456	1696	2 - 343	11448	Gln-1 to Gln-9, Leu-30 to Gln-35, Thr-76 to Gln-81, Gly-85 to Gln-91.	H0271: 1 and H0521: 1.	
HDPEV55	575202	1697	472 - 230	11449	Ser-1 to Ser-14.	H0075: 1, L0766: 1, H0521: 1 and L0748: 1.	
HDPEW80	734937	1698	224 - 508	11450	Met-14 to Leu-28, Pro-30 to Leu-38, Ser-62 to Ala-67.	S0033: 1 and H0521: 1.	
HDPEY90	788870	1699	3 - 173	11451		H0521: 2	

HDPFZ58	735975	1700	1 - 234	11452	Pro-7 to Trp-14, Gly-53 to Glu-60, Met-71 to Lys-78.	H0583: 1, H0521: 1 and H0543: 1.	
HDPGB73	574603	1701	129 - 257	11453	Asp-1 to Tyr-20.	H0581: 1, H0271: 1 and H0521: 1.	
HDPGG28	625678	1702	1 - 351	11454	Thr-37 to Arg-43, Ala-49 to Gly-54, Pro-59 to Gly-66, Glu-83 to Arg-89.	H0521: 3	
HDPGH27	937144	1703	196 - 312	11455		H0486: 1 and H0521: 1.	11p15 108985, 186921, 602092
HDPGL14	415961	1704	283 - 444	11456		H0521: 2	
HDPGL21	760926	1705	38 - 232	11457	Ala-17 to Arg-23.	H0521: 2	
HDPGL95	919792	1706	243 - 455	11458		H0521: 2	
HDPGL65	666830	1707	186 - 67	11459		S0114: 1 and H0521: 1.	
HDPGM85	783563	1708	271 - 429	11460	Lys-37 to Trp-46.	H0521: 2	
HDPGO30	780359	1709	1 - 420	11461	Pro-4 to Ala-10, Ala-12 to Trp-22, Ser-24 to Lys-33, His-42 to Phe-49, Ile-56 to Glu-70, Glu-122 to Glu-140.	H0521: 2	
HDPGO52	852800	1710	3 - 188	11462	Glu-1 to Arg-10, Gly-12 to Glu-22, His-25 to Glu-33.	S0002: 1 and H0521: 1.	
HDPQP54	464312	1711	215 - 466	11463	Ala-1 to Gly-14.	H0341: 1 and H0521: 1.	
HDPQP75	872249	1712	219 - 422	11464	Gly-18 to Pro-26.	H0521: 2	
HDPGT43	495783	1713	515 - 219	11465		H0063: 1 and H0521: 1.	
	852795	9557	408 - 617	19309			
	852806	9558	250 - 369	19310			
HDPGU50	720595	1714	231 - 344	11466		H0521: 3 and S0053: 1.	
HDPGX44	683277	1715	260 - 406	11467	Thr-28 to Arg-39.	H0521: 1 and H0522: 1.	
HDPHB75	915912	1716	27 - 140	11468		H0521: 4, H0522: 1, H0542: 1 and H0543: 1.	
HDPHF59	677172	1717	97 - 225	11469	Ser-30 to Arg-38.	H0537: 1 and H0521: 1.	
HDPHG23	416041	1718	108 - 326	11470	Thr-1 to Asp-7.	H0521: 2	

HDPHG42	732133	1719	1 - 408	11471		H0521: 2, H0583: 1, H0341: 1, L0142: 1, H0445: 1 and H0543: 1.	
HDPHG89	733198	1720	410 - 601	11472		H0521: 1 and H0444: 1.	
HDPHH51	921093	1721	3 - 332	11473	Arg-1 to Leu-6, Thr-30 to Asn-36, Arg-48 to Ile-53, Asn-65 to Ser-85, Glu-92 to Asn-109.	S0298: 1 and H0521: 1.	
HDPHI02	919825	1722	275 - 460	11474	Ser-1 to Asp-6.	H0305: 1 and H0521: 1.	
HDPHI71	760325	1723	1 - 210	11475	Ala-1 to Ser-10, Pro-22 to Ser-34, Gln-47 to Asn-55.	H0521: 1 and H0522: 1.	
HDPHJ36	706624	1724	178 - 309	11476	Ser-30 to Arg-36.	H0521: 2	
HDPHK96	921957	1725	1 - 516	11477	Pro-1 to His-6, Ser-13 to Cys-22, Lys-49 to Glu-54, Arg-60 to Trp-72, Arg-90 to Arg-99, Gln-117 to His-127.	H0402: 2, S0052: 2, S0428: 2, H0271: 1, H0521: 1 and H0445: 1.	
HDPILA15	772020	1726	2 - 592	11478	Gln-7 to Lys-13, Tyr-17 to Glu-26, Asp-97 to Ser-104, Asn-135 to Met-140.	H0521: 1 and H0522: 1.	
HDPIC37	954869	1727	377 - 694	11479	Lys-1 to Thr-14, Glu-28 to Val-34, Lys-56 to Ala-66, Gln-72 to Lys-79.	H0521: 2	
HDPID10	928163	1728	2 - 559	11480	Gln-16 to Gln-25, His-36 to His-45, His-48 to His-57, His-63 to Gln-70, Ala-76 to His-93, Gln-97 to Gly-107, Gln-121 to Gly-137.	H0521: 2	
HDPID37	868169	1729	82 - 276	11481	Pro-42 to Gln-65.	H0341: 3, H0656: 1, H0580:	

HDP1E42	713081	1730	199 - 399	11482	Arg-7 to Gln-19.		1, S0344: 1, S0002: 1 and H0521: 1.		
HDP1F86	591540	1731	2 - 205	11483	Lys-1 to Gly-10, Arg-17 to Arg-33, Ala-39 to Pro-50.		H0250: 1 and H0521: 1, H0521: 4, L0740: 1 and L0593: 1.	14q11.2	182600, 186880, 190195, 190195, 222700, 600243, 602279, 602279
HDP1H48	677664	1732	7 - 405	11484	Thr-16 to Arg-22, Gly-28 to Gly-36, Gln-43 to His-60.		H0580: 1, S0278: 1 and H0521: 1.		
HDP1P26	681519	1733	268 - 528	11485			H0580: 1, H0521: 1 and L0748: 1.		
HDP1Q55	961163	1734	72 - 278	11486	Pro-16 to Tyr-21, Ser-34 to Trp-40, Ser-57 to Thr-67.		L0748: 3, H0271: 2 and H0521: 1.	9q12	602014
HDP1Q65	747791	1735	287 - 424	11487			H0521: 2		
HDP1T53	926498	1736	33 - 383	11488	Pro-16 to Ser-21.		H0581: 1 and H0521: 1.		
HDP1T61	741724	1737	1 - 420	11489	Glu-1 to Arg-33, Gly-45 to Pro-52, Pro-62 to Ser-71, Pro-83 to Trp-95.		AR089: 1, AR061: 0, H0521: 1 and H0522: 1.		
HDP1A04	628745	1738	37 - 261	11490	Leu-1 to Trp-8, Ala-36 to Gly-41.		H0521: 2		
HDP1A26	767110	1739	3 - 428	11491	Gln-1 to Asp-7, Leu-41 to Glu-47, Lys-55 to Glu-62, Ser-113 to Trp-119.		H0521: 2		
HDP1B08	921453	1740	3 - 194	11492	Gln-1 to Tyr-7.		H0265: 1 and H0521: 1.		
HDP1J05	911170	1741	1 - 333	11493			AR050: 11, AK054: 1, AR051: 0, S0002: 2, H0185: 1, H0521: 1, H0576: 1 and L0779: 1.		
	928715	9559	1178 - 759	19311					
HDP1K06	852781	1742	282 - 452	11494					
HDP1K73	765446	1743	265 - 417	11495					
HDP1N68	752907	1744	198 - 317	11496	Lys-4 to Asn-9.		H0063: 1 and H0521: 1, H0571: 2, H0083: 1 and H0521: 1.		

HDP/O40	711003	1745	2 - 163	11497	Arg-30 to His-35, Gly-14 to Ser-20, Lys-35 to Lys-47.	H0589: 1 and H0521: 1.
HDP/P32	918630	1746	1 - 153	11498		
HDP/P79	538038	1747	264 - 473	11499	Gln-1 to Thr-6.	H0580: 1 and H0521: 1.
	774743	9560	281 - 111	19312	His-3 to Asp-11, Leu-13 to Thr-27, Ser-47 to Arg-54.	H0421: 1 and H0521: 1.
HDP/R11	965011	1748	1 - 288	11500		
HDP/U86	785391	1749	503 - 279	11501		H0521: 1 and H0522: 1.
						L0439: 6, L0752: 4, L0794: 3, L0805: 2, L0776: 2, L0438: 2, L0756: 2, H0486: 1, L0435: 1, H0641: 1, L0803: 1, L0666: 1, H0521: 1 and L0755: 1.
HDP/KD52	959653	1750	163 - 447	11502		S0114: 1, H0656: 1, S0002: 1, S0426: 1, S0052: 1, S0053: 1 and H0521: 1.
HDP/KD82	778970	1751	10 - 177	11503	Ala-46 to His-51.	H0521: 1 and H0445: 1.
HDP/K40	710991	1752	1 - 369	11504	Pro-65 to Gly-75, Pro-80 to Gly-91, Lys-98 to Gly-111.	H0521: 1 and H0542: 1.
HDP/KK25	677921	1753	1 - 126	11505	Cys-33 to Pro-42.	S0134: 1 and H0521: 1.
HDP/LB25	965139	1754	19 - 183	11506	Gln-21 to Gln-39.	H0521: 2 and L0748: 2.
HDP/LC45	909091	1755	235 - 828	11507		AR089: 1, AR061: 0 L0439: 3, L0438: 2, H0521: 2, L0773: 1, L0662: 1, L0766: 1, H0542: 1 and H0543: 1.
HDP/LC60	740144	1756	88 - 396	11508	Gly-23 to Gly-37, Ala-39 to Arg-48.	H0521: 2
HDP/LD11	966610	1757	77 - 331	11509	Ser-34 to Asp-41.	H0521: 2
HDP/LD29	690409	1758	310 - 432	11510		H0521: 2
HDP/LD57	734528	1759	203 - 394	11511		H0521: 2
HDP/LD89	786704	1760	319 - 435	11512		H0521: 2
HDP/LE38	706639	1761	185 - 328	11513	Gly-16 to Trp-21,	H0521: 2

HDPLE63	703477	1762	1 - 447	11514	Val-27 to Trp-32. Tyr-3 to Arg-10, Arg-21 to Lys-32, Gln-43 to Glu-51, Ile-72 to Thr-81, Lys-97 to Asp-102.	H0521: 2 and H0486: 1.	
HDPLE75	852685	1763	51 - 236	11515		H0521: 2	
HDPLE88	625293	1764	80 - 202	11516	Glu-18 to Thr-24.	H0521: 2	
HDPLE96	915966	1765	225 - 449	11517		H0521: 2	
HDPLF86	785316	1766	62 - 631	11518	Lys-26 to Ser-32, Met-110 to Glu-115.	H0521: 2 and L0591: 1.	
HDPLG10	964213	1767	376 - 203	11519	Phe-36 to Lys-48.	H0521: 2, H0402: 1 and L0741: 1.	
HDPLJ28	840111	1768	1 - 96	11520		H0521: 2	
HDPLK49	835603	1769	1 - 213	11521	Ile-1 to Ala-6,	H0521: 2	
HDPLN06	935010	1770	118 - 408	11522	Gly-36 to Leu-41.	H0521: 2	
HDPLN76	921700	1771	249 - 404	11523		H0306: 1 and H0521: 1.	
HDPLN80	724098	1772	424 - 621	11524		T0041: 1 and H0521: 1.	
HDPLT29	958196	1773	1 - 216	11525	Pro-1 to Ala-12, Arg-19 to Gly-25.	H0305: 1, S0344: 1 and H0521: 1.	
HDPLV74	765334	1774	270 - 479	11526	Met-1 to Pro-11.	H0556: 1 and H0521: 1.	
HDPLMA48	582015	1775	2 - 706	11527	Asp-1 to Lys-17, Ala-53 to Lys-61, Asp-66 to Arg-73.	AR089: 19, AR061: 15 H0581: 1, H0521: 1 and H0522: 1.	
HDPMC49	852767	1776	813 - 1061	11528		H0265: 1 and H0522: 1.	
HDPMF53	733466	1777	187 - 327	11529	Thr-18 to Ala-24, Ser-27 to Trp-32.	H0477: 1 and H0522: 1.	
HDPMH83	661316	1778	1 - 579	11530	Arg-19 to Asp-27, Gln-40 to His-45, Gln-77 to Leu-83.	H0581: 1 and H0522: 1.	120220, 120240, 123580, 151385, 171860, 190685, 236100, 236200, 240300, 267750, 600065, 601072, 601145
HDPMJ93	852763	1779	220 - 510	11531	Gln-11 to His-20.	H0264: 1 and H0522: 1.	

HDPMO62	912722	1780	1 - 582	11532	Ser-85 to Ser-90. Ala-14 to Gly-20, Gly-34 to Pro-44, His-128 to Ser-134.	AR089: 1 S0002: 2 and H0522: 1.		
HDPMP25	678068	1781	347 - 601	11533	Arg-1 to Pro-6, Gln-23 to Asn-35, Thr-49 to Lys-60.	S0116: 1 and H0522: 1.		
HDPMQ34	956248	1782	228 - 374	11534	Thr-44 to Ile-49.	H0522: 2		
HDPMS42	713759	1783	96 - 263	11535		L0005: 2, L0740: 2, L0157: 1, L0766: 1, L0809: 1, L0787: 1, S0052: 1, H0522: 1, L0741: 1 and L0749: 1, S0212: 1, L0438: 1 and H0522: 1.		
HDPMV53	697470	1784	97 - 270	11536	Ser-50 to Asn-58.	H0522: 2, H0581: 1, H0063: 1 and H0521: 1.		
HDPMW22	665153	1785	124 - 366	11537		L0777: 3 and H0522: 2. H0522: 2		
HDPMZ01	916447	1786	1 - 195	11538	Thr-19 to Arg-26.	AR089: 1, AR061: 1 H0522: 2 and L0766: 1.		
HDPNA03	924082	1787	7 - 78	11539	Val-2 to Gly-8, Asp-20 to Gln-26.	H0521: 2 and H0522: 1.		
HDPNC96	934520	1788	3 - 734	11540	Asn-1 to Asp-6, Ala-20 to Ala-27, Ser-34 to Ile-47, Pro-60 to Ser-65, Arg-82 to Trp-87.			
HDPND35	973108	1789	80 - 466	11541	Gly-2 to Lys-8.	H0556: 3 and H0522: 1.	5c32-q33	109690, 109690, 131400, 138491, 138491, 138491, 154500, 180071, 181460, 222600, 222600, 222600, 234000, 272750, 600807, 601411, 601596, 602089
HDPNE60	974827	1790	37 - 939	11542				
HDPNI03	924081	1791	111 - 413	11543	Ala-10 to Ala-23, Thr-49 to Trp-64.	L0471: 2 and H0522: 2.		

HDPN114	767447	1792	3 - 149	11544	Gln-80 to Arg-87. Thr-15 to Ala-22, Glu-43 to Ser-48.	H0264: 1 and H0522: 1.	
HDPOC44	707241	1793	119 - 481	11545	Asp-49 to Lys-58, Gln-71 to Ser-80, Ser-112 to Arg-117.	H0486: 1, H0090: 1 and H0522: 1.	
HDPOD96	939770	1794	14 - 277	11546	Arg-6 to Pro-14, Arg-22 to Gln-29, Leu-59 to Arg-64.	H0521: 2 and H0522: 1.	
HDPOF25	852745	1795	215 - 475	11547	Lys-1 to Gln-7.	H0589: 2 and H0522: 1.	
HDPOI52	927699	1796	114 - 422	11548	Ala-73 to Ala-89.	S0114: 1, H0179: 1, L0761: 1 and H0522: 1.	
HDPOJ93	792193	1797	140 - 343	11549	Thr-3 to Leu-10, Pro-19 to Thr-29.	H0179: 2 and H0522: 1.	
HDPOK47	973097	1798	153 - 311	11550	Gln-31 to Arg-38.	H0087: 1 and H0522: 1.	
HDPOL60	767953	1799	2 - 148	11551		H0583: 1 and H0522: 1.	
HDPOL66	681391	1800	280 - 438	11552		H0580: 1 and H0522: 1.	
HDPOX65	674963	1801	107 - 226	11553		H0264: 1 and H0522: 1.	
HDPOY33	702285	1802	31 - 207	11554	Asn-13 to Met-21, Asn-23 to Gln-37, Gly-53 to Ser-59.	S0002: 1 and H0522: 1.	
HDPOZ51	926977	1803	3 - 416	11555	Gly-10 to Leu-17.	H0486: 1 and H0522: 1.	
HDPPA66	870840	1804	231 - 497	11556		H0635: 1, S0002: 1, H0522: 1 and L0748: 1.	
HDPPC83	683656	1805	3 - 263	11557		S0114: 1 and H0522: 1.	
HDPPD59	708334	1806	3 - 236	11558		H0522: 1 and H0436: 1.	
HDPPG35	579315	1807	2 - 550	11559	Gly-4 to Gln-12.	H0083: 1 and H0522: 1.	
HDPPG86	923846	1808	175 - 342	11560		H0522: 2	
HDPPK33	666510	1809	259 - 453	11561	Thr-15 to Gly-27.	L0748: 3, L0777: 2, H0421: 1, L0762: 1, L0805: 1, L0783: 1, L0788: 1, L0532: 1, H0521: 1, H0522: 1 and L0756: 1.	
HDPLL30	692095	1810	74 - 241	11562	Arg-8 to His-27, Thr-38 to Thr-48.	S0002: 1 and H0522: 1.	
HDPPM09	625281	1811	2 - 529	11563	Val-1 to Pro-10.	H0521: 2 and H0522: 1.	1p32 120950, 120960.



HDPPN33	958993	1812	3 - 95	11564	Leu-12 to Arg-39, Cys-44 to Gly-57, Lys-94 to Gly-99, Glu-114 to Ser-134, Pro-145 to Phe-165. Lys-1 to Lys-8, Arg-16 to Lys-26.			138140, 178300, 187040, 600101, 600650, 600650, 600722, 600722
HDPPN59	909867	1813	174 - 473	11565	Arg-9 to Ala-15, Tyr-37 to Lys-42, Glu-48 to Gly-54. Pro-59 to Asn-65.		H0522: 2	
HDPPN88	963382	1814	334 - 555	11566	Pro-1 to Arg-17, Asn-60 to Phe-69. Leu-14 to Gly-20.		AR061: 1, AR089: 0 H0522: 2 and L0758: 1. H0271: 1, S0426: 1 and H0522: 1. H0580: 1 and H0522: 1. S0114: 1, H0305: 1, H0522: 1 and H0423: 1. H0179: 1 and H0522: 1.	
HDPPP24	812091	1815	1 - 474	11567	Pro-1 to Arg-17, Asn-60 to Phe-69. Leu-14 to Gly-20.		AR089: 3, AR061: 1 L0755: 4, H0521: 1 and H0522: 1. H0583: 1, H0522: 1 and L0740: 1.	
HDPPQ39	712993	1816	302 - 460	11568	Ser-40 to Arg-46, Thr-51 to Asp-60.		H0264: 1, H0521: 1 and H0522: 1. H0522: 2 and H0521: 1.	
HDPPU30	671973	1817	2 - 310	11569	Asn-1 to Phe-9, Pro-20 to Ser-31, Asn-40 to Lys-45. Ser-19 to Ser-25.		H0522: 3 H0522: 2 and H0421: 1. H0521: 1 and H0522: 1.	
HDPPU44	951276	1818	176 - 376	11570	Lys-1 to Glu-10, Asn-56 to Ser-67.		H0522: 2	
HDPPW36	785239	1819	156 - 308	11571	Gly-28 to Asn-38. Ile-43 to Asp-51, Arg-53 to His-61, Pro-63 to Lys-69.		H0522: 2	
HDPPX43	674958	1820	1 - 303	11572	Phe-1 to Tyr-8, Thr-17 to Tyr-27.		H0522: 2 H0264: 1 and H0522: 1.	
HDPPA91	973075	1821	131 - 331	11573				
HDPPQ21	786516	1822	66 - 281	11574				
HDPPQ33	830539	1823	125 - 295	11575				
HDPPQ45	928430	1824	1 - 273	11576				
HDPPQ15	789876	1825	26 - 364	11577				
HDPPQ64	746043	1826	131 - 301	11578				

HDPQL72	760934	1827	1 - 282	11579	Arg-8 to Arg-13, Leu-36 to Asp-73.	H0522: 2		
HDPQN03	923168	1828	270 - 449	11580		H0650: 1, H0580: 1 and H0522: 1.		
HDPQO40	949723	1829	1740 - 1048	11581	Arg-5 to Pro-11, Phe-32 to Pro-37, Pro-52 to Arg-59, Ser-75 to Pro-80, Pro-225 to Ser-231.	AR061: 2, AR089: 2 H0486: 3, L0766: 3, L0777: 3, S0002: 2, S0426: 2, L0779: 2, L0759: 2, H0477: 1, L0805: 1, H0522: 1, H0478: 1, L0743: 1, H0445: 1 and H0543: 1.		
HDPQO77	739816	1830	185 - 352	11582	Tyr-1 to Arg-7.	H0522: 2		
HDPQR31	741278	1831	3 - 434	11583	Leu-28 to Glu-33, Arg-48 to Gly-53, Pro-60 to Glu-66, Leu-70 to Arg-79, Gly-89 to Gly-96.	H0581: 1, H0522: 1 and H0543: 1.		
HDPQU30	768771	1832	250 - 477	11584		H0522: 2		
HDPQV63	744471	1833	111 - 320	11585		L0439: 3, H0583: 1 and H0522: 1.		
HDPRE08	958933	1834	205 - 351	11586		H0220: 1, H0521: 1, L0754: 1 and L0746: 1.		
HDPRE10	961306	1835	123 - 308	11587	Lys-36 to Lys-43.	H0521: 2		
HDPRG09	828572	1836	20 - 241	11588	Ser-7 to Ser-23, Asp-56 to Ser-74.	H0090: 1 and H0521: 1.		
HDPRH02	919404	1837	68 - 790	11589		L0766: 4, L0769: 3, L0774: 3, L0755: 3, L0761: 2, H0521: 2, L0771: 1 and L0777: 1.		
HDPRH59	739077	1838	319 - 450	11590		H0521: 2 and L0766: 1.		
HDPRI39	773790	1839	1 - 192	11591	Gly-14 to Gly-19, Glu-30 to Glu-41.	H0179: 1 and H0521: 1.		
HDPRL58	724652	1840	73 - 252	11592	Pro-26 to Thr-38.	S0114: 1 and H0521: 1.		
HDPRLN15	577985	1841	151 - 336	11593	Pro-9 to Lys-16.	H0457: 1 and H0521: 1.		
HDPRI29	690399	1842	115 - 420	11594	Leu-64 to Arg-69.	H0635: 3, H0583: 1, H0521: 1 and L0366: 1.		

HDP RP83	773394	1843	178 - 465	11595	Glu-6 to Phe-20, Thr-60 to Val-65.	H0521: 2 S0428: 1 and H0521: 1.	
HDP RS79	774077	1844	1 - 249	11596	Val-32 to Arg-37.	H0521: 2	
HDP RY05	958822	1845	101 - 298	11597	Tyr-39 to Pro-44, Ile-56 to Pro-63.	L0748: 2, S0002: 1, L0659: 1 and H0521: 1.	
HDP RY33	893790	1846	2 - 247	11598	Arg-1 to Gly-7, Ala-9 to Ala-15, Ala-53 to Gly-60.	L0794: 6, L0800: 5, L0771: 3, L0803: 3, L0761: 2, L0764: 2, L0804: 2, H0521: 2, L0750: 2, L0777: 2, H0581: 1, L0769: 1, L0772: 1 and L0757: 1.	
HDP RY70	677782	1847	1 - 228	11599	Arg-11 to Leu-16, Ser-62 to Pro-67.	H0264: 1 and H0521: 1.	11q22 105580, 133780, 602574, 602574
HDP SC55	731496	1848	2 - 238	11600	Arg-1 to Trp-6, Val-33 to Asp-39.	T0041: 1 and H0521: 1.	
HDP SG10	961323	1849	3 - 206	11601	Cys-13 to Pro-20, Gly-27 to Ala-35, Gly-78 to Ala-83.	H0087: 1 and H0521: 1.	
HDP SI84	782867	1850	1 - 423	11602	Asn-1 to Asn-6.	H0457: 7, L0662: 2, L0766: 1, L0804: 1, L0806: 1, L0655: 1, L0789: 1, S0216: 1, H0521: 1, L0756: 1 and L0755: 1.	
HDP SM07	620372	1851	289 - 471	11603	Glu-4 to Phe-18, Thr-38 to Val-63.	H0521: 3	
HDP SO36	959141	1852	1 - 243	11604	Gln-34 to Gly-41, Ser-61 to Trp-66, Met-71 to Met-77.	S0116: 1 and H0521: 1.	
HDP SS57	734507	1853	85 - 315	11605	Trp-27 to Tyr-32.	H0521: 2, H0436: 1 and H0543: 1.	14q32.3
HDP SU54	670838	1854	25 - 360	11606	Ala-1 to Gly-9, Ala-12 to Ser-49, His-59 to Thr-65.	H0521: 4 H0521: 4	
HDP SV04	614924	1855	224 - 424	11607	Lys-7 to Ser-21.	H0521: 2	
HDP SV29	690415	1856	2 - 358	11608			
HDP SY30	691778	1857	172 - 2	11609			

HDPTC31	878639	1858	80 - 367	11610		H0521: 2	
HDPTJ25	706448	1859	160 - 324	11611	Gln-8 to His-15.	H0402: 1 and H0521: 1.	
HDPTI79	669209	1860	592 - 837	11612	Lys-17 to Gly-27.	L0766: 5, L0777: 2, H0255: 1, H0402: 1, S0344: 1 and H0521: 1.	
HDPTO71	760142	1861	384 - 647	11613		H0551: 1 and H0521: 1.	
HDPTP07	741632	1862	1 - 276	11614		H0521: 2	
HDPTS95	906940	1863	111 - 341	11615	Glu-7 to Ile-14.	H0521: 2 and H0581: 1.	
HDPTT20	669029	1864	37 - 234	11616	Ala-38 to Leu-44.		
HDPTU30	691181	1865	1 - 183	11617		H0521: 2	
HDPTU66	697090	1866	40 - 387	11618	Thr-83 to Gly-88.	H0521: 2	
HDPTU95	876582	1867	147 - 1	11619	Lys-36 to Ser-49.	H0521: 2	
HDPTW90	722699	1868	1 - 282	11620	Gly-13 to Gly-18, Arg-26 to Gly-33, Gly-40 to Gly-49.	AR089: 0, AR061: 0 H0521: 2 and H0641: 1.	
HDPUJ28	852687	1869	31 - 261	11621	Thr-22 to Gly-29, Thr-34 to Asn-39.	H0521: 1 and H0445: 1.	
HDPUF77	769852	1870	39 - 197	11622		H0521: 2	
HDPUF94	861520	1871	245 - 400	11623	Tyr-25 to Thr-41.	H0521: 2	
HDPUG06	968313	1872	312 - 437	11624		H0402: 1, H0305: 1 and H0521: 1.	
HDPUQ02	973235	1873	175 - 588	11625	Gly-1 to Pro-15.	AR054: 2, AR051: 1, AR050: 1 H0521: 5	
HDPU862	604483	1874	3 - 221	11626	Gln-27 to Thr-32, Arg-39 to Ser-45, Lys-53 to Ser-60, Lys-67 to Gln-73.	S0278: 1 and H0521: 1.	
HDPUV09	774165	1875	365 - 544	11627			
HDPUV36	706712	1876	2 - 385	11628	Ser-7 to Asn-17.	S0428: 1 and H0521: 1. H0486: 1, L0766: 1 and H0521: 1.	
HDPUV11	966556	1877	185 - 922	11629		S0002: 1 and H0521: 1.	
HDPUVH13	656711	1878	94 - 303	11630	Val-32 to Arg-45.	L0455: 1, H0521: 1 and H0522: 1.	
HDPUVJ94	927023	1879	147 - 365	11631		S0428: 1 and H0521: 1.	

HDPVQ96	796133	1880	161 - 274	11632			H0521: 1 and H0445: 1.	
HDPVR71	740340	1881	170 - 307	11633			H0486: 1, H0521: 1 and L0594: 1.	
HDPVU35	852616	1882	164 - 310	11634	Pro-20 to Lys-26.		S0428: 2 and H0521: 2.	
HDPVV46	718160	1883	3 - 359	11635	Arg-1 to Val-9, Pro-19 to Pro-25, Lys-28 to Val-33, Pro-54 to Ala-63, Ser-82 to Glu-93, Pro-100 to His-107, Pro-113 to Glu-119.		H0416: 1 and H0521: 1.	
HDPVV95	582503	1884	182 - 364	11636	Ser-8 to Phe-13, Lys-21 to Arg-32.		S0002: 1 and H0521: 1.	
HDPVW13	656715	1885	198 - 521	11637			H0090: 1 and H0521: 1.	
HDPVY53	727593	1886	1 - 330	11638	Pro-13 to His-21, Asn-34 to Asp-42, Trp-78 to Lys-89.		H0521: 2	
HDPVY58	710458	1887	3 - 152	11639	Leu-6 to Phe-13, Arg-23 to Leu-29, Ser-32 to His-38.		H0521: 3	
HDPWA55	965474	1888	169 - 354	11640	Glu-22 to Ser-28, Asn-45 to Ser-51.		H0591: 1 and H0521: 1.	
HDPWD25	677764	1889	75 - 275	11641	Glu-35 to Ser-40, Gly-55 to Pro-67.		H0521: 2	
HDPWE80	909916	1890	94 - 765	11642	Asp-8 to Cys-21, Val-25 to Asn-33, Thr-47 to Pro-55, Ala-62 to Thr-68, Val-79 to Lys-88, Asn-91 to Asn-104, Tyr-114 to Gly-120, Thr-187 to Glu-192, Ile-217 to Thr-224.		H0521: 9, L0595: 2, L0593: 1 and L0594: 1.	
HDPWE88	857980	1891	170 - 439	11643	Gln-1 to Met-9, Arg-39 to Lys-45, Lys-66 to Leu-75.		H0521: 2	8q22.2 148900, 216550

HDPWH10	967692	1892	2 - 175	11644	Thr-3 to Ser-11.	H0650: 1, H0318: 1 and H0521: 1.		
HDPWN34	703814	1893	294 - 446	11645	Ser-1 to Met-6, Lys-37 to Cys-43.	S0134: 1, L2250: 1, L0766: 1, H0521: 1 and H0543: 1.	5p13	108962, 120940, 217050, 217050, 217070, 245050, 600837, 600946, 600946, 600946
HDPWY46	915964	1894	140 - 475	11646				
HDPXE68	852626	1895	134 - 421	11647	Ser-43 to Pro-48.	H0521: 2	19q13.4	134790, 191044, 600040, 600138
HDPXF52	726450	1896	34 - 156	11648	Ser-15 to Leu-21.	H0521: 2, L0772: 1, L0764: 1, L0794: 1 and L0805: 1.		
HDPXL59	615543	1897	46 - 402	11649	Arg-45 to Met-52, Glu-75 to Arg-87, Ala-96 to Ser-102, Arg-110 to Ser-116.	L0756: 2, L0731: 2, H0250: 1 and H0521: 1.		
HDPXL68	707532	1898	317 - 619	11650		H0457: 1, H0521: 1 and H0522: 1.		
HDPXP04	614895	1899	501 - 752	11651	Pro-6 to Leu-12, His-21 to Lys-26.	H0581: 1, H0457: 1, H0521: 1 and L0581: 1.		
HDPXU29	852638	1900	359 - 517	11652		H0521: 2		
HDPXW75	951320	1901	284 - 784	11653	Lys-4 to Ser-21.	AR089: 2, AR061: 1 S0278: 1, H0521: 1 and L0740: 1.		
HDPXX01	915914	1902	3 - 197	11654	Arg-19 to Ser-25, His-37 to Ala-42.	H0521: 2		
HDPXZ92	743429	1903	3 - 209	11655		H0556: 1 and H0521: 1.		
HDPYC51	919000	1904	241 - 2	11656		H0521: 2		
HDPYD58	726288	1905	4 - 267	11657	Ser-38 to Gly-43, Ser-66 to Ser-72.	H0521: 1 and H0543: 1.		
HDPYD92	791222	1906	2 - 214	11658	Val-3 to Glu-8, Gly-21 to His-39, Glu-47 to Ile-64.	H0521: 2		
HDPYE96	717598	1907	54 - 497	11659	Thr-16 to Tyr-22, Lys-49 to Ala-58, Thr-67 to Ala-73.	S0212: 1 and H0521: 1.		

HDQYF79	774272	1908	510 - 346	11660	Ala-105 to Arg-111.	S0002: 1 and H0521: 1.	
HDQYH79	886845	1909	3 - 107	11661	Ala-2 to Asp-18.	S0278: 1, H0416: 1, S0428: 1, H0521: 1 and L0749: 1.	
HDQDU40	791340	1910	186 - 458	11662	Arg-1 to Ile-7, Gln-9 to Gln-16.	H0521: 2	
HDQEA94	793378	1911	370 - 606	11663	Arg-1 to Ala-8, Gln-11 to Ser-18, Lys-27 to Thr-34, Ser-40 to Pro-49, Ser-62 to Asn-67, Ser-70 to Phe-84, Arg-86 to Gly-107.	H0521: 2 and H0264: 1.	
HDQEC77	771351	1912	2 - 550	11664		H0521: 2	
HDQEC82	779149	1913	316 - 483	11665	His-38 to Asn-44.	H0521: 2	
HDQEF04	927024	1914	140 - 457	11666	Thr-1 to Thr-9, Arg-43 to Ala-56.	H0521: 1 and S0308: 1.	
HDQEF89	786393	1915	228 - 392	11667	His-12 to Gln-19, Ala-48 to Ala-55.	H0271: 1, H0416: 1 and H0521: 1.	
HDQEI75	766698	1916	3 - 323	11668	Ser-91 to Ala-107.	H0650: 1, H0488: 1 and H0521: 1.	
HDQEN22	931041	1917	65 - 211	11669	Pro-23 to Lys-30.	H0581: 1 and H0521: 1.	
HDQES62	792766	1918	25 - 216	11670		H0521: 2 and H0445: 1.	
HDQET03	923015	1919	250 - 402	11671	Arg-3 to Arg-8.	H0521: 2	
HDQET24	805486	1920	275 - 539	11672		H0521: 2	
HDQEU26	959940	1921	274 - 423	11673		S0114: 1 and H0521: 1.	
HDQEU63	852614	1922	126 - 374	11674	Pro-14 to Leu-23, Pro-30 to Gly-44.	H0521: 2 and H0522: 1.	114835, 132700, 172490, 600968
HDQEU92	973212	1923	142 - 279	11675	Ser-1 to Ala-6.	H0521: 3	
HDQFA01	924539	1924	508 - 702	11676		H0250: 4, H0423: 4, L0766: 3, H0657: 2, S0116: 1, H0369: 1, H0581: 1, H0488: 1, H0641: 1, L0792: 1, L0665: 1 and H0521: 1.	
HDQFC85	783797	1925	98 - 541	11677	Gln-29 to Cys-39, Pro-91 to Pro-96.	H0521: 2 and H0690: 1.	

HDQFK04	926758	1926	88 - 345	11678	Arg-109 to Thr-118.	H0635: 1 and H0521: 1.	
HDQFU11	966106	1927	2 - 331	11679	Gly-1 to Ala-15, Leu-37 to Lys-42, Ala-54 to Gly-69, Pro-76 to Gly-84.	H0521: 2	
HDQFW03	915968	1928	389 - 556	11680	Ile-12 to Gln-21.	H0521: 2	
HDQGB04	852577	1929	179 - 358	11681		L0143: 1, H0521: 1 and H0542: 1.	
HDQGC76	950734	1930	177 - 299	11682	Lys-17 to Arg-27.	H0521: 1 and H0445: 1.	
HDQGG01	974439	1931	3 - 215	11683		H0521: 3	
HDQKG63	875920	1932	99 - 395	11684		H0521: 2	
HDQKG93	791744	1933	289 - 441	11685	Pro-24 to Pro-30.	H0521: 3, S0144: 1 and S0002: 1.	
HDQGO11	966100	1934	217 - 471	11686		H0521: 2	
HDQGR80	880654	1935	199 - 450	11687	Glu-53 to Lys-70, Gly-77 to Asn-84.	H0521: 2	
HDQGT70	909848	1936	2 - 448	11688	Gln-1 to Gln-10.	H0521: 5	
HDQHF10	963485	1937	273 - 1	11689		H0521: 2	
HDQHK04	926988	1938	241 - 540	11690	Ser-8 to Ser-16, His-56 to Phe-61.	L0745: 2, H0581: 1, L0527: 1, H0521: 1 and L0744: 1.	
HDQHM43	852556	1939	181 - 345	11691	Gly-19 to Gly-28.	H0521: 1 and H0436: 1.	
HDQHO04	926976	1940	6 - 104	11692		H0305: 1, H0589: 1 and H0521: 1.	
HDQHO07	852555	1941	133 - 321	11693		H0521: 2	
HDQHP44	811790	1942	2 - 430	11694	Phe-6 to Asn-14, Thr-73 to Ala-78, Pro-84 to Gly-90, Ala-94 to Gly-100, Gln-107 to Pro-116.	H0521: 2	
HDQHO83	973129	1943	307 - 119	11695		H0521: 3	
HDQHT10	963481	1944	1 - 219	11696	Pro-8 to Ser-39, Cys-44 to Ser-50, Leu-66 to Cys-73.	H0521: 2	
HDQHZ10	961336	1945	2 - 349	11697	Gln-3 to Ile-17, Pro-24 to Gly-29.	H0521: 2, S0002: 1 and L0589: 1.	



HDQHZ22	879416	1946		1 - 408			His-67 to Gly-73, Pro-81 to Lys-94.		
HDQJH19	974391	1947		421 - 266	11698		Gly-1 to Gly-6, Asp-62 to Arg-68.	AR089: 7, AR061: 3 H0521: 2	
HDQJ11	966021	1948		34 - 348	11699			H0521: 3	
HDQMA71	926528	1949		432 - 590	11701			H0521: 2, H0421: 1 and L0659: 1.	
HDQMD13	924108	1950		1 - 273	11702		Thr-1 to Pro-7, His-34 to Arg-40.	H0318: 1 and H0524: 1. H0524: 10	
HDQMD14	783547	1951		3 - 209	11703		Arg-1 to Pro-8.	H0524: 10	
HDQPI83	780731	1952		135 - 326	11704			H0522: 2	
HDRA68	752316	1953		83 - 169	11705			H0537: 3	
HDTAG28	765834	1954		36 - 173	11706			H0486: 1 and S0344: 1.	
HDTAQ55	728772	1955		88 - 264	11707		Arg-43 to Tyr-49.	H0159: 1 and H0486: 1.	
HDTAY23	973925	1956		79 - 366	11708		Pro-39 to Ser-47.	S0298: 1 and H0486: 1.	
HDTBF27	974565	1957		63 - 500	19313		Arg-46 to Leu-58.		
	683389	1957		531 - 656	11709		Lys-1 to Thr-10, Arg-28 to Glu-37.	H0580: 1, H0486: 1, L0803: 1, L0666: 1 and L0777: 1.	
HDTBL45	785534	1958		54 - 404	11710		Gly-5 to Cys-12, Glu-26 to Arg-52, Ala-90 to Pro-97, Ala-102 to Glu-107.	AR061: 3, AR089: 2 H0485: 1, H0486: 1 and H0457: 1.	
HDTBO48	945083	1959		3 - 491	11711			AR089: 38, AR061: 5 H0486: 2	
HDTBO74	765555	1960		82 - 234	11712		Ala-1 to Leu-13.	H0090: 2, H0486: 1, L0766: 1, L0743: 1, L0751: 1, L0777: 1 and H0422: 1.	
HDTBO94	869818	1961		2 - 301	11713		Leu-24 to Trp-42.	H0486: 1, H0521: 1, L0748: 1 and L0757: 1.	
HDTBQ20	886757	1962		187 - 471	11714		Pro-16 to Thr-26, Pro-31 to Thr-42.	H0486: 2	
HDTBQ34	703446	1963		1 - 138	11715		Glu-26 to His-33.	H0486: 2	
HDTBQ47	720298	1964		48 - 293	11716		Tyr-51 to Glu-56, Thr-76 to Ala-82.	H0486: 2 and L0662: 1.	
HDTBQ56	799840	1965		797 - 1024	11717			L0777: 10, H0486: 4.	

						L0666: 2, L0740: 2, L0646: 1, L0662: 1, L0766: 1, L0803: 1, L0633: 1, L0657: 1, L0532: 1, L0663: 1 and L0665: 1.
HDTBQ80	775420	1966	256 - 369	11718	Leu-22 to Thr-38.	H0486: 2
HDTBR15	660236	1967	11 - 193	11719		H0486: 2
HDTBR50	846630	1968	130 - 342	11720	Ala-2 to Glu-7, Arg-50 to Glu-58.	AR089: 41, AR061: 4 H0486: 2
HDTBV02	920008	1969	291 - 473	11721		H0486: 1 and H0477: 1.
HDTBV18	893761	1970	379 - 239	11722		H0486: 1 and H0271: 1.
HDTBW52	726060	1971	319 - 519	11723		H0486: 3 and H0521: 1. H0486: 2
HDTBX47	719530	1972	107 - 229	11724	His-130 to Lys-140.	AR089: 8, AR061: 2 S0218: 1 and H0486: 1.
HDTBY88	934472	1973	3 - 464	11725		H0306: 1 and H0486: 1. L0748: 3, H0485: 1 and H0486: 1.
HDTC60	740350	1974	33 - 215	11726	Asp-14 to Glu-19.	H0486: 1 and H0521: 1.
HDTD45	799875	1975	355 - 636	11727	Ala-30 to Ser-53, Pro-60 to Gly-68.	H0486: 2 H0486: 1, L0663: 1 and H0436: 1.
HDIDC23	673331	1976	362 - 523	11728	Thr-25 to Lys-43.	H0486: 1 and H0521: 1.
HDIDCS3	916348	1977	105 - 233	11729	Tyr-1 to Lys-11, Ser-29 to Lys-43.	H0486: 1 and S0002: 1.
HDITD49	799872	1978	261 - 443	11730	Trp-34 to Ile-52, Pro-63 to Glu-70.	H0486: 1, L0766: 1 and H0521: 1.
HDITDG42	713588	1979	333 - 205	11731	Cys-7 to Ser-15.	H0486: 1, H0318: 1 and L0750: 1.
HDITDG70	587730	1980	83 - 343	11732	Asp-18 to Lys-26.	H0255: 2 and H0486: 1.
HDITDL88	868565	1981	62 - 310	11733	Lys-42 to Ser-55.	H0305: 3 and H0486: 1.
HDITDP37	571417	1982	214 - 351	11734	Ser-42 to Asn-48, Ser-76 to Ser-89.	H0486: 1 and H0439: 1.
HDITDP33	587773	1983	1 - 216	11735		19q13.32-q13.33 152780, 600040
HDITEI19	912765	1984	2 - 313	11736		
HDITEJ30	915445	1985	36 - 206	11737		
HDITEN69	650840	1986	1 - 240	11738		
HDITES50	964709	1987	3 - 395	11739		

HDTPC55	731397	1988	264 - 330	11740	Glu-15 to Gly-20.	H0255: 1 and H0486: 1.
HDTFD13	835596	1989	36 - 443	11741		H0607: 2, L0745: 2 and H0486: 1.
HDTFE23	675407	1990	22 - 312	11742	Pro-63 to Ser-69.	H0486: 1 and H0521: 1.
HDTFI53	738221	1991	1 - 63	11743		H0486: 1 and H0543: 1.
HDTFP51	924898	1992	2 - 325	11744	Asn-1 to Arg-6.	S0114: 1, H0486: 1 and H0423: 1.
HDTFQ26	681234	1993	161 - 304	11745	Ser-9 to Arg-14.	L0803: 2, S0114: 1, H0486: 1, L0662: 1, L0754: 1 and L0747: 1.
HDTCG59	893721	1994	79 - 186	11746		H0486: 2
HDTHG15	953336	1995	164 - 349	11747	Val-1 to Cys-7, Lys-11 to Pro-18.	H0305: 1, H0486: 1 and L0804: 1.
HDTHG03	923452	1996	2 - 223	11748	Gly-19 to Phe-27, Lys-42 to Lys-53.	H0608: 1 and H0486: 1.
HDTHG64	799860	1997	62 - 142	11749	Arg-22 to Ser-27.	H0486: 2
HDTHG27	682689	1998	2 - 112	11750	Glu-26 to Pro-31.	L0717: 1, H0486: 1 and H0421: 1.
HDTHG34	855739	1999	273 - 431	11751	Lys-48 to Lys-53.	H0486: 1, H0063: 1 and L0743: 1.
HDTHG93	724545	2000	54 - 197	11752	Asp-27 to Asp-40.	H0486: 1 and S0032: 1.
HDTHG21	783047	2001	3 - 383	11753	Leu-9 to Ser-14.	H0486: 1 and H0069: 1.
HDTHG32	726197	2002	1 - 114	11754		H0341: 1 and H0486: 1.
HDTHA89	838813	2003	2 - 214	11755		H0486: 1 and H0521: 1.
HDTHB41	711849	2004	170 - 334	11756		H0486: 1 and H0423: 1.
HDTHB95	795180	2005	151 - 330	11757	Ile-24 to Thr-32, Tyr-42 to Arg-48.	H0486: 1, H0444: 1 and H0445: 1.
HDTHK91	789790	2006	229 - 402	11758	Lys-20 to Pro-26, Gly-42 to Ser-47.	H0486: 1 and H0422: 1.
HDTHM43	851854	2007	3 - 233	11759	Pro-1 to Gly-6.	H0486: 2
HDTHO45	799861	2008	1 - 123	11760	Ser-28 to Cys-36.	H0486: 3
HDTHQ15	923899	2009	1 - 612	11761	Arg-36 to Asp-42, Ala-55 to Lys-62, Ser-71 to Gly-81, Ala-87 to Ser-93.	L0766: 2, H0486: 1 and H0521: 1.
HDTHQ55	799859	2010	1 - 198	11762	Gly-1 to Cys-8.	H0486: 2

HDTHW16	799839	2011	329 - 571	11763	Val-28 to Leu-34.	H0486: 2		104170, 104170,
HDTHZ46	957669	2012	119 - 370	11764	Pro-44 to Pro-49.	H0255: 1, H0486: 1 and L0748: 1.	22q11	104170, 115470, 142360, 188400, 188400, 217095, 600850, 601607
HDTHB38	971665	2013	738 - 529	11765	Asn-18 to Asn-24.	H0486: 2		
HDTHC48	828038	2014	215 - 376	11766	Lys-1 to Lys-7.	H0486: 2		
HDTHC74	838780	2015	310 - 453	11767	Thr-24 to Gly-32.	H0486: 2		
HDTHD61	908946	2016	332 - 547	11768	Glu-21 to Cys-29, Cys-43 to Thr-53, His-59 to Tyr-72.	AR089: 1, AR061: 0 H0486: 2		
HDTHF01	883070	2017	168 - 527	11769	Met-27 to Glu-34.	AR089: 57, AR061: 40 H0486: 2		
HDTHF90	787413	2018	2 - 259	11770	Cys-37 to Glu-43, Lys-58 to Lys-63, Glu-71 to Asp-78.	H0271: 2 and H0486: 1.		
HDTHG34	799851	2019	191 - 355	11771	Ser-22 to Arg-28, Glu-50 to Arg-55.	H0486: 3		
HDTHH43	935643	2020	260 - 550	11772	Leu-32 to Trp-38.	H0486: 1 and H0436: 1.		
HDTHM13	926952	2021	137 - 451	11773	Tyr-10 to Trp-16.	H0486: 2		
HDTHR88	931122	2022	229 - 411	11774	Asn-1 to His-12.	H0486: 3, L0803: 3, L0774: 2, L0772: 1, L0666: 1, L0740: 1 and L0731: 1.		
HDTHV22	883109	2023	31 - 411	11775	Tyr-14 to Asn-20.	H0486: 2		
HDTHV37	799867	2024	2 - 232	11776	Asn-1 to His-12.	H0486: 2		
HDTHV62	799835	2025	431 - 619	11777	Asn-1 to Glu-11.	H0486: 2		
HDTHV03	922928	2026	240 - 413	11778	Glu-60 to Tyr-68.	H0486: 2		
HDTHX57	799828	2027	2 - 205	11779	Cys-2 to Lys-8.	H0486: 2		
HDTHY24	799854	2028	288 - 404	11780	Ser-73 to Lys-79.	H0486: 2 and L0766: 1.		
HDTHY26	799855	2029	127 - 312	11781	Glu-1 to Arg-7.	H0486: 2		
HDTHY41	799853	2030	80 - 334	11782	Ser-14 to Gly-21.	H0486: 2		
HDTHY69	799857	2031	71 - 388	11783				

HDTI244	925574	2032	1 - 402		11784	Thr-62 to Tyr-68.	L0766: 3, H0486: 2, L0764: 2, H0657: 1, H0271: 1, L0794: 1, H0576: 1 and L0779: 1.	
HDTI454	799856	2033	15 - 77		11785	Gln-1 to Lys-13.	H0486: 2	
HDTI451	799850	2034	8 - 244		11786	Ser-49 to Asp-55.	H0486: 3	
HDTI116	918631	2035	2 - 181		11787	Ser-21 to Gly-26.	H0486: 1, L0766: 1 and H0543: 1.	
HDTI137	799834	2036	311 - 553		11788	Glu-1 to Thr-6, Leu-34 to Ala-40.	AR089: 46, AR061: 7, H0486: 2, L0663: 1 and L0754: 1.	
HDTI102	913787	2037	3 - 116		11789		AR089: 34, AR061: 11, H0486: 2	
HDTI155	856558	2038	488 - 691		11790	Phe-2 to Gln-11, Arg-24 to His-34, Pro-50 to Val-63.	L0761: 3, L0779: 2, L0777: 2, H0486: 1, H0591: 1, S0426: 1, L0800: 1, S0053: 1 and L0759: 1.	
HDTI181	851897	2039	287 - 469		11791	Gln-8 to Ser-16.	H0486: 2	
HDTI188	805597	2040	2 - 376		11792	Gly-21 to Cys-27, Gly-32 to Ser-47, Arg-60 to Gln-72, Ser-102 to Leu-107.	H0486: 2	
HDTI170	918563	2041	881 - 1108		11793	Lys-11 to Pro-26.	H0486: 2 and L0758: 2.	
HDTI106	934242	2042	175 - 291		11794		H0486: 2 and H0445: 1.	
HDTI188	799865	2043	349 - 525		11795		H0486: 2	
HDTI144	886936	2044	1 - 555		11796	Ser-60 to Thr-71, Thr-82 to Leu-94, Gln-113 to Asp-123, Val-125 to Tyr-133, Leu-144 to Gly-149.	AR054: 60, AR051: 40, AR050: 36, AR089: 5, AR061: 2, H0521: 4, H0486: 2, S0002: 2, L0770: 2, L0769: 2, L0766: 2, L0518: 2, L0783: 2, L0777: 2, L0731: 2, H0422: 2, H0556: 1, H0583: 1, H0650: 1, H0657: 1.	

HDTKS28	885471	2045	217 - 525	11797	Asp-6 to Glu-11.	H0179: 1, L0055: 1, H0488: 1, S0426: 1, L0662: 1, L0775: 1, L0665: 1, L0665: 1, S0053: 1, H0659: 1, L0754: 1, L0779: 1, L0759: 1 and H0543: 1.	
HDTKU06	934269	2046	81 - 260	11798	Ser-30 to Leu-38.	H0486: 2	
HDTKX89	799829	2047	191 - 364	11799		H0486: 2	
HDTKZ74	799842	2048	449 - 610	11800	Thr-2 to Asn-7.	H0486: 2	
HDTLA08	958307	2049	3 - 278	11801	Ser-45 to Lys-53.	H0402: 2, H0486: 2 and L0776: 1.	
HDTLA53	851826	2050	3 - 170	11802	Arg-18 to Glu-24, Phe-27 to Gly-37.	H0486: 2	
HDTLB55	905872	2051	129 - 518	11803	Ala-15 to Asp-34, Met-43 to Ser-48, Glu-80 to Glu-94.	H0580: 1 and H0486: 1.	
HDTLD17	908601	2052	1 - 450	11804		AR089: 1, AR061: 0	
HDTLH19	959932	2053	42 - 293	11805	Asn-5 to Lys-14, Ala-69 to Ser-74.	H0486: 3	
HDTLK51	851846	2054	459 - 217	11806		H0486: 2	
HDTLN80	805562	2055	326 - 553	11807		H0486: 1 and H0521: 1.	
HDTLP72	799837	2056	3 - 161	11808		H0486: 2	
HDTLX24	799838	2057	1 - 306	11809	Glu-11 to Glu-17, Lys-44 to Gln-51, Glu-78 to Ser-83.	H0486: 2	
HDTMG55	959633	2058	394 - 507	11810	Glu-16 to Val-22.	H0255: 1 and H0486: 1.	
HDTMH14	799847	2059	163 - 456	11811	Pro-14 to Leu-29, Ile-66 to Ser-71.	H0486: 2	
HEIAA07	920257	2060	1 - 171	11812	Pro-17 to Glu-23, Ala-33 to Leu-40, Leu-48 to Lys-56.	S0140: 9 and H0179: 2.	
HEIAA38	907594	2061	191 - 337	11813	Arg-1 to Gly-6.	S0140: 3	
HEIAB13	677400	2062	65 - 238	11814	Pro-24 to Gly-34, Gly-49 to Tyr-54.	S0140: 2	

HEIAB27	683474	2063	3 - 326	11815			L0766: 2, S0212: 1 and S0140: 1.
HEIAB68	721652	2064	1 - 81	11816	Lys-1 to Lys-14.		S0140: 2
HEIAC83	920022	2065	52 - 132	11817			S0140: 2
HEIAD05	932397	2066	53 - 307	11818	Val-2 to Ala-8, Lys-11 to Cys-17, Glu-28 to Gly-33.		S0140: 2
HEIAE05	932390	2067	102 - 224	11819			S0140: 2
HEIAE76	577254	2068	197 - 301	11820			S0140: 2
HEIAG38	577308	2069	1 - 180	11821			S0053: 2, S0140: 1 and L0665: 1.
HEIAH70	757174	2070	172 - 339	11822	Pro-7 to Asp-12, Lys-29 to Cys-36.		S0140: 2
HEIAL53	466308	2071	82 - 330	11823	Tyr-3 to Val-26, Leu-41 to Ser-48.		S0140: 2
HEIAO01	916438	2072	72 - 242	11824	Trp-1 to Asp-18, Glu-44 to Asn-57.		S0218: 1 and S0140: 1.
HEIAO14	851197	2073	152 - 286	11825	Gly-38 to Ile-44.		S0140: 2
HEIAO48	917281	2074	17 - 175	11826	Thr-48 to Glu-53.		S0140: 2 and T0002: 1.
HEIAO51	725649	2075	85 - 222	11827	Met-8 to Thr-13.		S0140: 2
HEIAT07	953574	2076	3 - 362	11828	Pro-18 to Lys-26.		S0140: 2
HEIAT36	576598	2077	61 - 288	11829	Ala-2 to Ser-9, Lys-41 to Asp-50.		S0140: 2, L0769: 1 and L0790: 1.
HEIAU68	753000	2078	223 - 110	11830			S0140: 2
HEIAV20	523766	2079	129 - 233	11831			H0271: 2, S0140: 1 and H0179: 1.
HEIJC82	781171	2080	188 - 334	11832			S0140: 2
HEOAB19	939448	2081	2 - 322	11833	Glu-17 to Ala-35.		H0581: 1 and H0439: 1.
HEOAD29	690762	2082	68 - 277	11834	Glu-6 to Asn-13.		H0439: 1 and S0053: 1.
HEOMC23	830094	2083	215 - 403	11835			H0457: 2
HEOME43	967292	2084	151 - 1350	11836	Gly-1 to Arg-8.		H0255: 1 and H0457: 1.
HEOMF61	573059	2085	2 - 202	11837	Arg-1 to Cys-8, Leu-42 to Val-52.		S0052: 2 and H0457: 1.
HEOMG01	916672	2086	149 - 472	11838	Cys-67 to Cys-72.		H0457: 3

HEOMG04	92824	2087	3 - 77	11839	Asp-1 to Lys-6.	H0457: 2	
HEOMG16	93969	2088	64 - 360	11840	Asn-2 to Lys-9, Ala-77 to Trp-83.	H0457: 6	
HEOMG25	678190	2089	163 - 357	11841	Pro-16 to Glu-21.	H0457: 6, S0114: 2, H0556: 1 and S0222: 1.	
HEOMG32	699143	2090	139 - 423	11842		H0457: 7	
HEOMG48	963338	2091	3 - 242	11843	Pro-12 to Cys-19, Val-50 to Ser-56.	H0457: 4	
HEOMG78	920911	2092	1 - 330	11844		H0457: 2, H0264: 1, L0748: 1, L0754: 1 and L0593: 1.	
HEOMH04	854342	2093	461 - 667	11845		H0457: 9	
HEOMH31	951834	2094	376 - 603	11846		H0457: 4	5p15.2
HEOMH77	721342	2095	229 - 390	11847	Pro-11 to Arg-20.	H0457: 8, H0380: 1, H0013: 1, H0250: 1, H0635: 1 and L0766: 1.	123000, 602568
HEOMH89	787109	2096	3 - 347	11848	Asp-1 to Trp-10, Ala-13 to Pro-19, Asp-27 to Lys-45, Pro-47 to Cys-53, Thr-89 to Gly-97.	H0341: 1, H0581: 1 and H0457: 1.	
HEOMK83	918374	2097	225 - 494	11849	Gly-11 to Arg-16, Ser-23 to Trp-31.	H0457: 2 and H0581: 1.	
HEOML13	893874	2098	3 - 353	11850	Glu-9 to Trp-14, Pro-19 to Asp-25, Glu-32 to Glu-42, Gly-66 to Glu-71.	H0457: 3	
HEOML73	724043	2099	302 - 412	11851		H0457: 3	
HEOMM10	964736	2100	72 - 209	11852	Lys-5 to Thr-16.	H0457: 3	
HEOMN02	913819	2101	42 - 539	11853	Arg-3 to Cln-9, Met-30 to Gly-45, Ile-47 to Ile-68.	H0457: 5 and H0581: 1.	
HEOMO43	855659	2102	208 - 411	11854		H0457: 2	
HEOMO57	795128	2103	68 - 262	11855	Lys-9 to Ile-14, Lys-28 to Val-41.	H0457: 1 and H0444: 1.	
HEOMP31	698087	2104	178 - 378	11856	Gly-24 to Ser-30.	H0457: 1, H0521: 1, H0445: 1 and L0600: 1.	



HEOMP73	750609	2105	164 - 331	11857				H0457: 3
HEOMQ17	851049	2106	173 - 478	11858	Ser-37 to Asp-45			H0457: 2
HEOMQ75	965882	2107	71 - 196	11859	Leu-16 to Leu-22, Glu-31 to Leu-40, Gly-1 to Asn-9			H0457: 2
HEOMQ80	835599	2108	35 - 202	11860				H0457: 2
HEOMR13	657317	2109	375 - 671	11861				H0457: 1 and H0445: 1.
HEOMR57	575739	2110	115 - 204	11862				H0457: 2
HEOMR92	963130	2111	207 - 365	11863	Ser-17 to Arg-30, Asp-1 to Gly-8, Lys-11 to Trp-17, Gly-21 to Cys-44, Ser-70 to Arg-77			H0457: 2
HEOMR96	855652	2112	202 - 432	11864				H0457: 2
HEOMS08	959581	2113	54 - 206	11865	Arg-34 to Val-42			H0457: 2
HEOMS65	969184	2114	281 - 487	11866	Ser-17 to Glu-22			H0457: 3
HEOMS85	662928	2115	1 - 414	11867				H0457: 1 and H0521: 1.
HEOMS92	735720	2116	3 - 140	11868	Pro-3 to Pro-17, Pro-30 to Pro-42			H0457: 2
HEOMT38	850980	2117	2 - 427	11869	Arg-1 to Glu-9, Lys-36 to Glu-42			H0457: 2
HEOMT79	936687	2118	224 - 487	11870				H0457: 3
HEOMU07	953475	2119	234 - 115	11871				H0457: 2
HEOMU23	675971	2120	239 - 388	11872				H0457: 2, H0486: 1, H0264: 1, L0768: 1, L0666: 1, H0436: 1, L0754: 1, H0445: 1 and H0542: 1.
HEOMU79	965900	2121	2 - 283	11873	Pro-36 to Pro-44, Thr-73 to Pro-90			H0457: 4
HEOMV11	847274	2122	3 - 296	11874	Asp-1 to Gly-19, Gln-49 to Gly-57, Asp-71 to Lys-86			H0457: 3
HEOMV16	958211	2123	234 - 464	11875	Gly-14 to Lys-24, (Glu-34 to Ser-39, Ile-4 to Gln-15			H0457: 3 and L0438: 1.
HEOMV54	866586	2124	293 - 418	11876				S0114: 1, H0457: 1 and L0518: 1.
HEOMV81	915093	2125	328 - 504	11877				H0457: 2
HEOMW26	418125	2126	2 - 250	11878	Pro-1 to Pro-7			H0457: 1 and S0052: 1.

HEONW83	65908	2127	211 - 336	11879				H0457: 2		
HEOMX04	615337	2128	1 - 180	11880			Thr-12 to Ser-27, Gln-52 to Arg-60,	H0457: 2		
HEOMX61	958233	2129	256 - 435	11881				H0457: 5		
HEOMX65	575919	2130	3 - 206	11882			Ser-35 to Pro-43,	H0457: 2		
HEOMX92	919200	2131	132 - 434	11883			Lys-12 to Ser-19, Thr-35 to Met-40, Pro-43 to Tyr-48,	H0457: 5		
	961148	9562	41 - 244	19314						
HEONC06	855649	2132	119 - 322	11884			Lys-32 to Leu-44, Lys-62 to Cys-68,	H0457: 7		
HEOND75	918209	2133	2 - 304	11885				H0457: 4		
HEONJ79	506226	2134	118 - 300	11886				H0457: 2		
HEONK15	660365	2135	128 - 442	11887			Pro-9 to Ser-15, Ile-24 to Gly-29, Pro-41 to Arg-51.	H0457: 2	19q13.3	113900, 126340, 126391, 130410, 134790, 138570, 160900, 173850, 258501, 600040, 602225, 602225
HEONM30	692726	2136	136 - 270	11888			Leu-5 to Leu-22,	H0457: 2		
HEONM69	855638	2137	95 - 520	11889			Pro-53 to Asn-66, Pro-92 to Ser-98, Ser-106 to Gly-114,	H0457: 4	9q34.13	
HEONN28	745144	2138	133 - 291	11890			Thr-41 to Asn-53,	H0457: 2		
HEONO81	792074	2139	124 - 297	11891			Tyr-29 to Gln-35, Val-47 to Tyr-53,	H0486: 1 and H0457: 1.	1	
HEONP93	792377	2140	133 - 273	11892			Thr-39 to Phe-47,	H0457: 2 and L0740: 1.		
HEONQ08	959556	2141	247 - 528	11893			Ser-12 to Gly-20, Pro-50 to Leu-55,	H0457: 11 and L0543: 1.		
HEONQ19	930705	2142	3 - 806	11894			Ala-13 to Arg-20, Gln-35 to Lys-48,	AR089: 2, AR061: 0 H0457: 9, L0596: 3, L0803: 2, H0673: 1, L0455: 1, L0369: 1, L0764: 1, L0389: 1, L0375: 1, L0655: 1, L0809: 1, L0790: 1 and L0752: 1.		

HEONQ58	965881	2143	315 - 518	11895	Ile-1 to Lys-9	H0457: 8, H0656: 1 and L0366: 1.	
HEONQ65	967588	2144	3 - 353	11896	Leu-11 to Gly-16.	H0457: 3, S0212: 1 and H0069: 1.	
HEONQ69	556544	2145	2 - 340	11897		H0457: 3, H0264: 2 and H0656: 1.	
HEONU26	577429	2146	3 - 161	11898		S0116: 1, H0457: 1 and H0521: 1.	
HEONU75	851054	2147	1 - 228	11899	Thr-2 to Asn-8, Ser-15 to Pro-27.	H0457: 2	
HEONV59	949152	2148	1 - 279	11900	Ala-3 to Gly-10.	AR061: 0, AR089: 0	
HEONW15	575812	2149	237 - 392	11901	Phe-9 to Glu-20, Leu-30 to Arg-45.	H0457: 1 and H0521: 1.	
HEONX19	668740	2150	2 - 151	11902	Thr-1 to Ser-6.	H0457: 3	
HEONX49	485897	2151	183 - 494	11903	Glu-29 to Leu-34, Asn-36 to His-41, His-45 to Pro-55.	L0766: 5, H0402: 1, H0457: 1 and L0779: 1.	
	851020	9563	106 - 204	19315		H0457: 2 and H0556: 1.	
	851021	9564	582 - 869	19316			
HEOQB36	830013	2152	301 - 375	11904		H0457: 4	
HEOOD03	923505	2153	90 - 314	11905	Pro-6 to Trp-11, Phe-21 to Asp-26.	H0457: 3	
HEOOD59	738991	2154	1 - 213	11906	Pro-21 to Phe-32.	H0457: 2	
HEOOV40	710800	2155	210 - 371	11907		H0457: 3 and H0318: 2.	
HEOPT28	926837	2156	3 - 314	11908	Pro-1 to Lys-21, Lys-28 to Lys-37, Gly-65 to Pro-70, Arg-81 to Asp-86.	H0457: 8	16
HEOPE58	851009	2157	257 - 421	11909	Phe-28 to Val-36, Phe-44 to Pro-49.	AR089: 1, AR061: 0	
HEOPR03	839868	2158	189 - 377	11910		H0457: 4	
HEOPT18	918405	2159	2 - 310	11911	Val-6 to Tyr-11, Thr-14 to Asn-19, Thr-41 to Arg-50.	H0457: 3	
						H0457: 2	

HEOPF25	934171	2160	127 - 522	11912	Gln-62 to Ile-69, Glu-84 to Trp-89, Thr-93 to Pro-98.			
HEOPF33	969695	2161	22 - 342	11913	Thr-13 to Gly-27, Arg-60 to Gly-69, Gly-98 to Trp-106.	H0457: 6		
HEOPF56	850925	2162	372 - 599	11914	Gln-53 to Trp-58, Ala-66 to Gly-74, Glu-98 to Glu-103.	H0457: 6, L0766: 1 and L0789: 1.		
HEOPG01	915047	2163	3 - 254	11915	Ser-23 to Ala-32, Pro-57 to Ser-63.	H0457: 6 and L0036: 1.		
HEOPT69	883161	2164	142 - 594	11916	Ser-23 to Glu-34, Glu-48 to Gly-55.	H0457: 5		
HEOPT73	850936	2165	316 - 540	11917	Gly-7 to Thr-13, Pro-78 to Phe-85.	H0457: 5		
HEOPJ41	855634	2166	300 - 473	11918	Ala-1 to Met-6, Arg-15 to Pro-20, Phe-47 to Gly-53.	H0457: 5		
HEOPK43	930942	2167	92 - 304	11919	Ser-6 to Ala-12. Pro-27 to His-34, Arg-40 to Ser-48.	H0457: 4		
HEOPK47	966327	2168	366 - 500	11920		H0457: 1 and S0053: 1.		
HEOPK52	883170	2169	66 - 356	11921		H0457: 4		
HEOPK90	850883	2170	223 - 576	11922	Lys-36 to Met-47, Pro-62 to Trp-73, Gly-75 to Gly-81.	H0457: 9 and S0114: 2.		
HEOPN73	851002	2171	172 - 276	11923	Glu-1 to Lys-12, Ser-24 to Glu-35.	H0457: 2 and H0069: 1.		
HEOPN78	918205	2172	85 - 327	11924	Pro-6 to Arg-17, Ser-42 to Ser-56.	H0457: 4		
HEOPN95	973440	2173	185 - 454	11925	Leu-1 to Glu-6, Asn-28 to Gly-38, Ser-42 to Pro-47.	H0457: 4 and H0423: 1.		
HEOP008	958184	2174	2 - 226	11926				
HEOPP30	850916	2175	68 - 334	11927	Glu-23 to Asn-31, Ser-37 to Ala-43.	H0457: 4 H0457: 8		

HEOPQ06	934147	2176	163 - 516	11928	Phe-77 to Trp-89, Pro-21 to Cys-30, Ser-44 to Pro-49, Pro-65 to Ser-70, Cys-74 to Gly-85, Lys-98 to Glu-103.	H0457: 4	
HEOPW04	850948	2177	393 - 596	11929		H0457: 3	
HEOPW38	926764	2178	3 - 242	11930	Val-7 to Ser-26, Gln-43 to Arg-49, Lys-69 to Lys-76.	H0457: 3	
HEOPW67	840030	2179	212 - 367	11931	Glu-1 to Lys-14.	H0457: 2	
HEOPX85	855625	2180	1 - 201	11932	Thr-56 to Asp-62.	H0457: 2	
HEOPY05	918438	2181	294 - 434	11933		H0457: 7	
HEOPZ02	918407	2182	290 - 505	11934	Thr-42 to Ser-47.	H0457: 5	
HEOPZ05	928257	2183	22 - 144	11935		H0457: 2	
HEOPZ11	965970	2184	232 - 453	11936	Thr-2 to Cys-15, Arg-34 to Thr-39.	H0457: 3	
HEOPZ29	878503	2185	2 - 394	11937	Arg-1 to Gly-8, Ser-52 to Gly-59.	H0457: 3	
HEOQB30	909899	2186	175 - 423	11938	Glu-32 to Ser-41, Met-51 to Leu-65, Met-76 to Ala-83.	H0457: 3 and S0002: 1.	
HEOQC10	963398	2187	59 - 217	11939	Gln-40 to Leu-47.	H0457: 4	
HEOQC64	850981	2188	1 - 153	11940	Ser-32 to Ala-38.	H0457: 2 and L0060: 1.	
HEOQC76	909032	2189	106 - 657	11941	Ala-10 to Tyr-22, Phe-31 to Leu-37, Ser-59 to Leu-64, Tyr-70 to Lys-90.	AR089: 1, AR061: 1 H0457: 3 and L0766: 2.	
HEOQB04	922876	2190	87 - 260	11942		H0457: 3 and H0069: 1.	
HEOQF77	850974	2191	213 - 416	11943		H0457: 3	
HEOQG73	958109	2192	2 - 208	11944	His-1 to Thr-12.	H0457: 4 and L0748: 1.	
HEOQG80	850971	2193	263 - 451	11945		H0457: 2	
HEOQH81	934100	2194	371 - 568	11946		H0457: 6	
HEOQI11	965973	2195	396 - 599	11947		H0457: 4	
HEOQJ11	879559	2196	125 - 472	11948	Arg-52 to Thr-61, Thr-80 to Ala-88.	H0457: 3	

HEOQK70	934370	2197	1 - 297	11949			H0457: 4		
HEOQK72	847285	2198	2 - 160	11950			H0457: 3		
HEOQM83	850964	2199	71 - 601	11951		Arg-1 to Trp-6, Ala-8 to Pro-17, Pro-24 to Trp-41, Pro-46 to Cys-58, Pro-120 to Pro-127.	H0457: 2	3p21.1	150250, 164500, 168468, 182280, 238310, 600163, 601226, 601916
HEOQN06	934202	2200	479 - 772	11952			H0457: 9 and L0366: 1. H0318: 1 and H0457: 1.		
HEOQN15	864110	2201	191 - 30	11953		Lys-1 to Met-17, Pro-26 to Trp-35.			
HEOQN87	850957	2202	146 - 406	11954		Lys-7 to Lys-15.	H0457: 2 and H0591: 1.		
HEOQN44	942596	2203	157 - 1026	11955		Phe-62 to Arg-67, Gln-92 to Leu-104, Arg-163 to Leu-171, Ile-175 to Thr-182, Ser-237 to Ser-244, Ala-270 to Arg-277.	AR089: 1, AR061: 0 H0457: 2		
HEOQS11	965930	2204	167 - 322	11956		Phe-26 to Asp-33, Ala-42 to Leu-49.	H0457: 5		
HEOQT57	850931	2205	469 - 657	11957		His-7 to Pro-18.	H0457: 6		
HEOQT76	850932	2206	216 - 671	11958		Gly-98 to Pro-104, Phe-122 to Pro-128.	H0457: 2		
HEOQW36	883227	2207	35 - 226	11959			H0457: 2		
HEOQW81	887147	2208	580 - 2	11960		Pro-51 to Gly-58, Arg-78 to Tyr-87, Asp-161 to Ala-166, Pro-187 to Gly-193.	AR050: 124, AR054: 107, AR051: 92 H0457: 5		
HEORC12	969585	2209	73 - 249	11961		Gly-1 to Asn-7.	H0457: 1 and H0422: 1.		
HEORC48	922885	2210	541 - 801	11962			H0457: 3 and L0748: 3.		
HEORE11	965904	2211	571 - 759	11963			H0457: 3 and L0748: 1.		
HEORE22	969579	2212	583 - 699	11964		Thr-10 to Gln-16.	H0457: 12		
HEORE27	850902	2213	106 - 288	11965		Pro-17 to Lys-23, Lys-30 to Gly-46.	H0457: 6 and H0581: 1.		
HEORE79	959572	2214	89 - 295	11966		Thr-8 to Pro-17, Leu-29 to Asp-41, Ser-47 to Gln-55.	H0457: 6		

HEORF12	969580	2215	360 - 497	11967	Glu-5 to Gly-15, Cys-21 to Gln-26, Asn-38 to His-44.	H0457: 3		
HEORH20	934067	2216	3 - 140	11968		H0457: 5		
HEORJ90	918166	2217	159 - 263	11969		H0457: 2		
HEORK01	914988	2218	20 - 169	11970		H0457: 2		
HEORM10	963194	2219	3 - 362	11971	Pro-11 to Ile-17.	H0457: 2		
HEORM21	839142	2220	180 - 434	11972	Ser-20 to Thr-31, Arg-33 to Gly-40, Cys-42 to Leu-50, Phe-54 to Arg-63.	H0457: 2	3q25.1-q25.2	222900, 601402
HEORR01	915015	2221	396 - 130	11973	Lys-19 to Ser-24, Ala-46 to Asn-51, Thr-63 to Trp-72.	H0457: 3 and L0749: 1.		
HEORL06	934097	2222	14 - 430	11974	Pro-4 to Gly-10.	H0457: 3		
HEOSI66	850917	2223	287 - 409	11975		H0457: 4		
HEOSJ50	922825	2224	25 - 213	11976		H0457: 2		
HEOSL01	914874	2225	272 - 544	11977	Ser-27 to Gly-32, Ser-47 to Trp-59.	H0457: 7		
HEOSL08	850951	2226	1 - 240	11978		H0457: 2		
HEOSL54	926849	2227	503 - 652	11979		H0457: 7		
HEOSN60	841869	2228	114 - 374	11980	Gly-3 to Asp-9, Ala-13 to Pro-26, Leu-80 to Thr-86.	H0457: 3 and H0580: 1.		
HEOSO01	855651	2229	10 - 315	11981	Pro-31 to Pro-39, Pro-53 to Ile-65, Phe-69 to Glu-80, Pro-97 to Ser-102.	H0457: 3 and H0486: 1.		
HEOSP05	928270	2230	2 - 199	11982	Arg-8 to Ile-20.	H0457: 2		
HEOSP06	933991	2231	70 - 348	11983	Ala-11 to Glu-29, Arg-67 to Ala-72, Pro-77 to Gly-86.	H0457: 2		
HEOSR54	855615	2232	2 - 316	11984	Pro-2 to Ser-7.	H0457: 2, H0271: 1 and H0423: 1.		
HEOSS04	926483	2233	2 - 178	11985		H0457: 2		
HEOST23	965916	2234	296 - 532	11986	Gln-31 to Ser-36.	H0457: 5		

HFSAC03	850146	2235	234 - 443	11987	Gln-54 to Gly-79, Phe-14 to Trp-27.	H0445: 3, H0306: 2, S0053: 2, H0057: 1, H0179: 1, S0314: 1, L0667: 1, S0428: 1, H0436: 1 and L0599: 1.		
	960974	9565	161 - 3	19317	Ser-45 to Lys-53.			
HFSAM43	715700	2236	41 - 175	11988	Gly-9 to Gln-15.	H0057: 1 and H0445: 1.		
HFSASQ59	572813	2237	137 - 3	11989	His-1 to Ala-6, Ser-29 to Ser-44.	H0402: 2, H0057: 1 and H0436: 1.		
HFSASV59	675922	2238	11 - 163	11990		H0402: 1, H0057: 1, L0527: 1, L0809: 1 and H0445: 1.		
HFSAX51	572815	2239	413 - 267	11991		H0402: 1, H0057: 1 and L0754: 1.		
HFSBF09	573315	2240	154 - 387	11992	Pro-14 to Leu-21.	H0057: 1 and S0052: 1.		
HFSBG31	504368	2241	3 - 110	11993	Val-16 to Gln-25, Thr-31 to Gly-36.	H0057: 2		
HHEAA27	575258	2242	112 - 297	11994		H0271: 1 and H0542: 1.		
HHEAM44	726856	2243	40 - 279	11995	Ala-1 to His-10.	L0717: 1, H0521: 1, H0542: 1 and H0543: 1.		
	970602	9566	503 - 799	19318	Gly-8 to Asn-13.			
HHEAW46	718120	2244	2 - 352	11996	His-3 to Pro-11, Pro-36 to Ala-45, Pro-82 to Leu-91, Arg-104 to Trp-114.	H0542: 2, L0637: 1 and L0734: 1.		
HHEBS24	858417	2245	57 - 320	11997		H0542: 2		
HHECK11	924982	2246	47 - 235	11998	Pro-29 to Met-35, Gln-48 to His-55.	H0069: 1 and H0542: 1.		
HHECK33	871375	2247	1 - 213	11999		H0542: 2		
HHECM01	916178	2248	117 - 386	12000		S0114: 1 and H0542: 1.		
HHECM66	781893	2249	181 - 321	12001		S0002: 1, L0748: 1 and H0542: 1.		
HHECR01	915285	2250	3 - 323	12002		H0542: 2	17	
HHECR08	959125	2251	327 - 557	12003	Leu-33 to Pro-42, Ser-64 to Phe-77.	L0764: 3, H0255: 1 and H0542: 1.		
HHECT58	973110	2252	126 - 254	12004		H0542: 3		
HHECT59	858407	2253	115 - 468	12005		H0488: 1 and H0542: 1.		



HHECT170	753842	2254	29 - 160	12006	Lys-27 to Thr-35.	T0042: 1 and H0542: 1.	
HHCEX82	915913	2255	2 - 457	12007		H0521: 4, H0522: 1, H0542: 1 and H0543: 1.	
HHEDB31	697806	2256	391 - 591	12008		H0255: 1 and H0542: 1.	
HHEDH57	665762	2257	231 - 413	12009	Ala-24 to Lys-32, Pro-42 to Gln-50.	L0750: 1, S0308: 1 and H0542: 1.	
HHEDJ94	906876	2258	155 - 337	12010	Asn-39 to Gln-47.	H0641: 1 and H0542: 1.	
HHEDM03	923908	2259	203 - 373	12011	Arg-7 to Asp-40.	H0542: 2	
HHEDN93	731067	2260	1 - 171	12012	Cys-12 to Leu-17.	T0002: 1 and H0542: 1.	134790, 191044, 600040, 600138
HHEDO53	973320	2261	2 - 58	12013		H0542: 2, H0543: 2 and H0551: 1.	
HHEDO74	463250	2262	228 - 401	12014		L0779: 3, H0542: 2, L0662: 1, L0766: 1, L0774: 1, L0776: 1 and H0423: 1.	
HHEDP88	878759	2263	3 - 332	12015	Arg-7 to Phe-15.	H0542: 2	
HHEDR27	791847	2264	1 - 459	12016	Pro-38 to Lys-46, Pro-68 to Pro-73, Leu-85 to Trp-126, Gln-147 to Thr-153.	H0069: 2 and H0542: 1.	129490, 167415, 176860, 176860, 256100
HHEDW03	923340	2265	3 - 422	12017	Lys-27 to Gly-42, Gly-67 to Gly-73, Pro-80 to Thr-105.	H0543: 2 and H0542: 1.	
HHEDW58	735609	2266	289 - 522	12018	Leu-1 to Phe-6, Leu-23 to Asp-33, Pro-35 to Arg-52.	H0486: 1 and H0542: 1.	
HHBEC07	952455	2267	1196 - 1912	12019	Pro-72 to Pro-86, Arg-92 to Val-97, Met-152 to Pro-161, Leu-164 to Arg-172, Gly-205 to Tyr-227, Leu-229 to Asn-239.	H0542: 2	
HHBEC61	741280	2268	24 - 149	12020		H0542: 2	
HHBEK88	702337	2269	62 - 244	12021		L0804: 3, L0662: 2, L0752: 2, L0757: 2, L0758: 2, H0542: 2, L0481: 1, L0021: 1.	

HHBEL47	719825	2270	276 - 425	12022	Gln-1 to Ile-15.	1, L0794: 1, L0774: 1, L0775: 1, L0652: 1, L0655: 1, L0659: 1, L0790: 1 and H0576: 1.
HHFBZ9	690073	2271	241 - 399	12023		L0805: 2, H0542: 2, L0776: 1, L0787: 1 and L0779: 1.
HHFBZ73	947568	2272	155 - 316	12024	Gln-15 to Tyr-24.	H0445: 1 and H0542: 1.
HHBFK12	966292	2273	82 - 273	12025	Lys-1 to Asn-13.	H0580: 1 and H0542: 1.
HHBFL47	973094	2274	2 - 256	12026	Ala-20 to Ala-25, Asn-60 to Trp-65.	H0542: 2 H0542: 3
HHBFZ58	735615	2275	2 - 223	12027	Arg-23 to Thr-28, Pro-38 to Ala-43, Met-66 to Cys-71.	H0542: 2, L0769: 1 and L0747: 1.
HHBGA66	969467	2276	26 - 124	12028	Asp-1 to Arg-9, Glu-14 to Gln-28.	H0542: 2
HHBHC74	974406	2277	448 - 666	12029		H0542: 3 and H0521: 1.
HHBHD94	964103	2278	1 - 318	12030	Gly-8 to Arg-14, Gly-21 to Gln-34, Ser-39 to Ser-44.	H0542: 2
HHBHU73	923895	2279	61 - 279	12031	Met-22 to Trp-27.	AR089: 64, AR061: 15 H0542: 2
HHBHW78	973140	2280	161 - 592	12032		H0542: 2 and H0556: 1.
HHBHI19	973230	2281	3 - 293	12033	Arg-5 to Gly-15, Pro-42 to Pro-47, Lys-58 to Pro-63.	H0542: 3
HHBHI30	961974	2282	154 - 438	12034		H0542: 2
HHBII91	974407	2283	113 - 328	12035	Thr-42 to Gln-53.	H0542: 2
HHBKG10	961957	2284	189 - 347	12036		H0542: 2
HHBKJ20	918032	2285	96 - 227	12037	Val-1 to Gly-6, Arg-18 to Lys-40.	H0542: 2
HHBKJ27	858384	2286	204 - 449	12038		H0542: 2
HHBKX06	933849	2287	92 - 250	12039	Ser-31 to Arg-38.	H0542: 2
HHBKP61	913413	2288	1 - 273	12040		AR054: 2, AR051: 2, AR050: 1 H0542: 2 and L0749: 1.

HHEKS53	973233	2289	177 - 461	12041	Ser-22 to Ala-29, Ile-32 to Thr-38, Gln-51 to Arg-59.	H0542: 4	
HHELD03	868495	2290	383 - 640	12042		H0581: 1 and H0542: 1.	
HHELD11	974419	2291	3 - 152	12043	Lys-1 to Asn-13, Gln-33 to Pro-39, Gln-44 to His-50.	H0542: 3	
HHEMA34	704035	2292	77 - 367	12044	Thr-1 to His-6, Pro-58 to Asn-65.	H0265: 1 and H0543: 1.	
HHEMA65	719229	2293	5 - 136	12045		S0116: 1 and H0543: 1.	
HHEMD28	858303	2294	15 - 158	12046	Asn-9 to Gly-23, Gly-41 to Ser-48.	H0436: 1 and H0543: 1.	
HHEMK21	670784	2295	1 - 276	12047	Arg-8 to Pro-17, Asp-36 to Asn-49.	H0543: 2	
HHEMN76	752947	2296	301 - 450	12048		H0543: 2	
HHEMO91	790100	2297	150 - 269	12049		H0543: 2	
HHEMQ56	858289	2298	30 - 314	12050	Gly-20 to Thr-51.	H0543: 2	
HHEMQ38	952989	2299	38 - 295	12051	Gly-1 to Gly-13, Ile-35 to Leu-40.	H0521: 1 and H0543: 1.	
HHEXC18	666335	2300	2 - 118	12052		S0134: 1 and H0543: 1.	
HHEXD28	468911	2301	173 - 451	12053		H0179: 1 and H0543: 1.	
HHEXD45	919630	2302	1 - 195	12054	Gly-1 to Lys-7.	AR089: 4, AR061: 2 H0543: 2	
HHEXE18	806606	2303	63 - 425	12055	Thr-37 to Asp-45.	S0278: 1, H0543: 1 and H0423: 1.	
HHEXE38	662972	2304	3 - 164	12056		H0543: 2 and S0053: 1.	
HHEXE47	720255	2305	114 - 350	12057		H0423: 2, H0254: 1, H0250: 1 and H0543: 1.	
HHEXG31	917904	2306	225 - 524	12058	Pro-1 to Phe-6, Pro-31 to Ser-37, Cys-85 to Asn-90.	L0740: 3, H0657: 2, H0421: 1, L0761: 1, L0662: 1, L0766: 1, L0776: 1, L0512: 1, L0748: 1, L0750: 1, L0758: 1 and H0543: 1.	
HHEXH93	691023	2307	8 - 391	12059	Thr-1 to Gly-6, Pro-13 to Trp-23, Pro-51 to Trp-65.	H0521: 1 and H0543: 1.	

HHENO53	709078	2308	301 - 164	12060	Pro-5 to Lys-21.	H0543: 2	
HHENO16	661841	2309	337 - 561	12061		H0543: 2	
HHENR11	960906	2310	596 - 832	12062	Val-15 to Lys-24.	H0069: 1 and H0543: 1.	
HHENR78	773537	2311	334 - 188	12063	Lys-1 to Arg-7, Ser-16 to Phe-21.	H0087: 1 and H0543: 1.	
HHENV38	657363	2312	3 - 386	12064	Arg-1 to Phe-20, Ser-46 to Pro-57, Lys-63 to Arg-75, Leu-77 to Ala-84, Arg-102 to Trp-117.	L0794: 4, L0803: 4, L0513: 2, H0637: 1, H0063: 1, L0761: 1, L0768: 1, L0809: 1, L0790: 1, L0777: 1 and H0543: 1.	
HHENZ86	670837	2313	81 - 269	12065	Cys-18 to Ser-26.	H0521: 1 and H0543: 1.	
HHEOF20	861457	2314	2 - 145	12066	Ser-15 to Gln-28, Ser-34 to Arg-41, Ser-47 to Phe-60.	H0543: 2	
HHEOF58	841978	2315	195 - 374	12067		H0543: 2 and H0444: 1.	
HHEOG17	662948	2316	2 - 205	12068	Gly-1 to Ser-9, Gly-43 to Gly-53.	H0264: 1, S0428: 1 and H0543: 1.	
HHEOG67	588154	2317	12 - 158	12069	Lys-7 to Pro-15, Leu-30 to Ala-37.	H0543: 2	
HHEOI18	677891	2318	3 - 395	12070	Gln-1 to Arg-8.	H0543: 2	
HHEOI10	911814	2319	2 - 463	12071	Met-64 to Leu-75, Met-78 to Tyr-89.	H0543: 2	
HHEOL59	588168	2320	1 - 165	12072		H0543: 2	
HHEOX60	734311	2321	212 - 412	12073	Thr-11 to Pro-17, Gln-25 to Phe-31, Gly-35 to Leu-44.	H0543: 2	
HHEOZ17	793087	2322	13 - 153	12074		H0421: 1, H0521: 1 and H0543: 1.	
HHEPD46	718950	2323	246 - 437	12075	Arg-9 to Val-14, Asn-23 to Lys-30, Gly-47 to Trp-52.	H0063: 1, L0794: 1, H0445: 1 and H0543: 1.	
HHEPD73	966828	2324	3 - 290	12076	Pro-19 to Thr-35, Gly-87 to Trp-94.	H0543: 2 and L0657: 1.	
HHEPF31	858269	2325	70 - 333	12077	Arg-26 to Trp-32.	H0581: 1 and H0543: 1.	
HHEPG15	659664	2326	3 - 449	12078	Gly-40 to Ser-55, Arg-74 to Ser-82.	H0457: 1 and H0543: 1.	

				Ser-107 to Val-118, Lys-140 to Lys-145.				
HHEPK28	686489	2327	170 - 277	Gln-1 to Lys-6.	12079			H0445: 1 and H0543: 1.
HHEPM73	683270	2328	103 - 204	His-9 to Tyr-17.	12080			H0543: 2, S0218: 1 and L0763: 1.
HHEPN44	716494	2329	525 - 761	Pro-9 to Pro-18, Val-32 to Asn-43.	12081			H0637: 1, L0748: 1, H0445: 1 and H0543: 1.
HHEPR14	869381	2330	376 - 612		12082			H0556: 1, L0749: 1 and H0543: 1.
HHEPS91	493744	2331	446 - 270		12083			S0002: 2, H0457: 1, S0426: 1, L0438: 1 and H0543: 1.
	934138	9567	545 - 826		19319			
HHEPZ10	963715	2332	169 - 2		12084			H0543: 2
HHEQB17	918056	2333	209 - 370		12085			H0543: 2
HHEQB47	841899	2334	364 - 477	His-1 to Leu-9.	12086			H0556: 1 and H0543: 1.
HHEQG21	934680	2335	199 - 351		12087			H0543: 2
HHEQG45	717303	2336	139 - 279		12088			H0543: 2
HHEQG52	956214	2337	174 - 64	Lys-1 to Gly-9, Asn-12 to Met-22.	12089			H0543: 2
HHEQG72	922619	2338	3 - 167	Gly-30 to Asn-40.	12090			H0543: 2
HHEQG75	766960	2339	158 - 361	Pro-48 to Pro-54.	12091			H0543: 2
HHEQG86	784752	2340	98 - 346		12092			H0543: 2
HHEQH63	744596	2341	187 - 351	Lys-8 to Ala-15.	12093			H0543: 2
HHEQI07	952416	2342	77 - 205	Pro-37 to Lys-43.	12094			H0543: 2
HHEQI11	966293	2343	98 - 211	Ser-12 to Asn-17.	12095			S0116: 1, H0090: 1, L0748: 1, H0543: 1 and H0423: 1.
HHEQI82	728596	2344	164 - 382	Gly-41 to Gly-49.	12096			H0306: 1 and H0543: 1.
HHEQI89	786607	2345	23 - 172		12097			H0543: 2
HHEQK01	871911	2346	64 - 249		12098			AR089: 7, AR061: 1 L0589: 1, H0542: 1 and H0543: 1.
HHEQQ36	707926	2347	37 - 186		12099			H0543: 2
HHEQP38	709076	2348	158 - 313	Pro-15 to His-24.	12100			H0543: 2
HHEQP83	780397	2349	170 - 352	Arg-31 to Gly-38.	12101			S0114: 1 and H0543: 1.
HHEQQ47	699160	2350	119 - 244	Thr-1 to Leu-8.	12102			H0543: 2

HHEQS17	662203	2351	226 - 513	12103	Pro-23 to Cys-33, Pro-10 to Lys-19, Met-77 to Gln-82.	H0265: 1, S0134: 1 and H0543: 1.		
HHQU09	755007	2352	271 - 465	12104		H0543: 2		
HHQV03	923324	2353	252 - 425	12105	Gln-50 to Phe-58.	H0543: 2 and L0002: 1.		
HHQV39	932851	2354	1 - 711	12106	Leu-7 to Phe-27, Gln-50 to Gln-57.	AR089: 3, AR061: 1 T0042: 1, H0543: 1 and H0422: 1.		
HHQX60	915561	2355	2 - 400	12107	Ser-61 to Phe-67, Pro-85 to Gln-90.	H0543: 2		
HHQY32	698633	2356	79 - 234	12108	Gly-19 to Arg-24, Ser-32 to Ala-41.	T0002: 1 and H0543: 1.		
HHERA17	858239	2357	30 - 269	12109	Pro-18 to Trp-27, Pro-48 to Ser-58, Ile-60 to Gln-77.	S0114: 1, H0650: 1, H0254: 1, H0255: 1, H0264: 1 and H0543: 1.		
HHERB03	933271	2358	226 - 432	12110	Pro-11 to Gln-16.	H0543: 3		
HHERB04	854112	2359	342 - 914	12111	Thr-30 to Leu-46, Leu-64 to Ser-73, Asp-107 to Thr-141, Ala-150 to Phe-162, Phe-165 to Ser-173, Ser-182 to Gln-191.	H0591: 1 and H0543: 1.	17	
HHERN11	966003	2360	2 - 118	12112	Arg-4 to Gly-16, Phe-24 to Asn-37.	H0543: 2		
HHERO39	858238	2361	171 - 368	12113	Arg-4 to Leu-10.	H0543: 2		
HHERO95	928142	2362	1038 - 1301	12114	Lys-8 to Val-14.	L0766: 5, L0759: 2, H0422: 2, H0650: 1, T0041: 1, L0794: 1, L0659: 1, L0779: 1, L0780: 1, H0543: 1 and H0423: 1.		
HHERQ04	925697	2363	168 - 302	12115	Lys-6 to Ser-11, Thr-38 to Lys-45.	H0543: 2		
HHERQ50	858049	2364	1 - 507	12116		H0090: 1, L0777: 1, L0731: 1, L0758: 1 and H0543: 1.		
HHERU77	934167	2365	213 - 350	12117	Pro-13 to Arg-21.	H0543: 2		
HHERY38	933142	2366	288 - 452	12118	Ser-5 to Asn-11,	H0543: 2, H0264: 1 and		

HHESX04	925700	2367			Pro-37 to Asp-44.	S0426: 1.	
HHESF07	952214	2368	1 - 399	12119	Pro-5 to Gly-15.	H0543: 3	
			365 - 601	12120	Gln-8 to Met-16, Glu-19 to Leu-28, Ser-35 to Phe-42, Lys-46 to Leu-51, Gln-54 to Thr-65, Lys-70 to Phe-76.	S0114: 1, L0766: 1, L0809: 1, L0749: 1, L0777: 1 and H0543: 1.	
HHESG02	918639	2369	98 - 328	12121	Gln-19 to Thr-37, Phe-46 to Phe-60.	H0543: 2	
HHESH33	893701	2370	214 - 495	12122	Gly-10 to Thr-17, Trp-39 to Gly-48, Ser-62 to Asp-73.	H0543: 3	
HHESI92	792431	2371	155 - 253	12123	Gln-9 to Lys-18.	H0402: 1, H0436: 1 and H0543: 1.	
HHESI03	922998	2372	38 - 163	12124	His-14 to Ser-20.	H0637: 1 and H0543: 1.	
HHESK36	779164	2373	17 - 301	12125	Pro-10 to Phe-15.	H0543: 2	
HHESN02	918634	2374	243 - 341	12126		H0543: 2	
HHESO94	793390	2375	159 - 458	12127	Cys-36 to Val-41, Arg-50 to Ser-59.	H0543: 2	
HHESP87	858224	2376	1 - 276	12128		H0543: 2	
HHEST60	858220	2377	173 - 3	12129	Gln-30 to Lys-37, Ser-46 to Thr-57.	H0543: 2	
HHESU02	918668	2378	306 - 503	12130		H0543: 2	
HHESU03	923030	2379	419 - 685	12131		H0543: 2 and S0278: 1.	
HHESU54	926341	2380	230 - 409	12132	Ala-10 to Gln-20, Pro-46 to Ser-51.	H0543: 2	
HHESU85	783820	2381	4 - 336	12133	Lys-27 to Gln-104.	H0543: 2 and L0547: 1.	
HHESV46	935074	2382	241 - 450	12134	Lys-21 to Gln-28, Thr-39 to Leu-45.	S0053: 1, H0444: 1 and H0543: 1.	
HHETA53	858211	2383	87 - 368	12135	Gln-28 to Asn-36, His-55 to Lys-72, Leu-74 to Arg-81, Gly-88 to Pro-94.	S0052: 1 and H0543: 1.	
HHETB42	973127	2384	65 - 232	12136	Ile-49 to Lys-56.	H0543: 3	
HHETCS0	927000	2385	36 - 242	12137	Asn-1 to Arg-6.	H0543: 2	

HHETD13	858218	2386	360 - 647	12138	Pro-46 to Lys-58. Gln-63 to His-69, Met-76 to Arg-82.	H0543: 2	
HHETE34	974392	2387	426 - 731	12139	Leu-1 to Tyr-26, Arg-57 to Lys-63.	H0543: 3	
HHETF07	952218	2388	94 - 333	12140		H0543: 2	
HHETF94	793420	2389	84 - 437	12141	Arg-26 to Gly-32, Ala-50 to Met-65.	H0341: 1 and H0543: 1.	
HHETK07	848748	2390	130 - 339	12142	Ser-16 to Met-30, Lys-64 to Asp-70.	H0543: 2, H0556: 1 and L0604: 1.	
HHETM02	790879	2391	163 - 249	12143	Leu-19 to Arg-29.	H0543: 2	
HHETQ54	908567	2392	2 - 532	12144		AR061: 2, AR089: 1 H0521: 1 and H0543: 1.	
HHETR21	936252	2393	131 - 712	12145	Thr-45 to Thr-52, Thr-139 to Asp-145.	H0543: 2	
HHETR94	793434	2394	275 - 553	12146	Tyr-1 to Thr-7, Pro-13 to Thr-20, Gln-84 to Lys-89.	H0543: 3	
HHETS04	926997	2395	86 - 256	12147	Glu-9 to His-25.	H0445: 2, H0402: 1, H0318: 1, H0264: 1 and H0543: 1.	
HHETU20	858206	2396	1 - 165	12148	Ala-1 to Met-22.	H0543: 2	
HHETV35	784894	2397	222 - 130	12149		H0543: 2	
HHETX01	915284	2398	138 - 335	12150	Arg-1 to Lys-16, Gly-30 to Pro-38.	H0439: 1 and H0543: 1.	
HHETY79	774171	2399	102 - 287	12151		T0041: 1 and H0543: 1.	
HHEUAG2	965709	2400	1 - 315	12152	Leu-13 to Met-20, Arg-27 to Leu-67.	H0543: 2, H0318: 1 and T0041: 1.	
HHEUC31	795268	2401	3 - 677	12153	Glu-26 to Pro-35, Glu-56 to Ser-62, Gln-67 to Val-73, Ser-77 to Thr-82, Ala-90 to Val-104, Thr-126 to Glu-134, Pro-205 to Pro-211.	AR089: 4, AR061: 2 H0543: 2 and L0596: 1.	
HHEUC84	788954	2402	183 - 338	12154		H0543: 2	
HHEU01	915274	2403	22 - 186	12155	Tyr-16 to Tyr-21.	H0543: 2	



HHEUE86	784879	2404	3 - 158	12156	Pro-8 to Lys-25, Tyr-37 to Asp-42.	H0556: 1, H0445: 1 and H0543: 1.	
HHEUE89	786254	2405	2 - 340	12157		H0069: 1, L0748: 1 and H0543: 1.	
HHEUPO2	918635	2406	212 - 376	12158	Pro-50 to Ser-55.	H0543: 2	
HHEUT33	952043	2407	72 - 263	12159	Ile-8 to Asn-14, Val-53 to Tyr-60.	H0543: 2	
HHEUY42	918029	2408	7 - 105	12160		H0543: 2	
HHEVU06	933921	2409	24 - 176	12161		L0662: 1, H0576: 1 and H0543: 1.	
HHEVL35	963644	2410	1 - 105	12162		H0543: 2	
HHEVNO7	952041	2411	94 - 315	12163		H0543: 2	
HHEVR07	952070	2412	60 - 305	12164	Pro-24 to Gln-32.	S0114: 1 and H0543: 1.	
HHEVS63	973213	2413	418 - 576	12165	Asp-1 to Lys-8.	H0543: 3	
HHEVS95	957950	2414	204 - 407	12166	Ser-32 to Tyr-38, Pro-56 to Ser-61.	H0543: 2	
HHEVV64	974520	2415	267 - 506	12167	Glu-44 to Thr-63.	H0318: 1, H0063: 1, H0679: 1 and H0543: 1.	
HHEWE44	973219	2416	170 - 454	12168	Thr-14 to Glu-24, Pro-33 to Gly-39.	H0543: 3	
HHEWF40	973234	2417	618 - 788	12169		H0543: 3	
HHEWL08	957946	2418	220 - 26	12170	Glu-1 to Lys-9, Cys-28 to Pro-37, Asp-39 to Val-47.	H0543: 2	
HHEWT32	858116	2419	139 - 309	12171		S0114: 1 and H0543: 1.	
HHEWU52	935243	2420	3 - 221	12172		H0543: 2	
HHEWU93	973141	2421	201 - 392	12173	His-7 to Ser-13, Tyr-33 to Phe-38.	H0543: 3	
HHEWY63	858114	2422	97 - 372	12174	Gln-49 to Asn-57.	H0543: 2	
HHEXD07	951983	2423	1 - 156	12175		H0543: 2 and L0599: 1.	
HHEXK51	932911	2424	172 - 26	12176		H0158: 1, S0426: 1 and H0543: 1.	
HHEXX06	933858	2425	1 - 240	12177	Ala-50 to Tyr-56.	H0265: 1 and H0543: 1.	
HHEXY05	920532	2426	69 - 401	12178	Cys-31 to Ile-46.	H0305: 3 and H0543: 2.	
HHEYG35	878225	2427	130 - 426	12179	Lys-59 to Ser-64.	S0002: 1 and H0543: 1.	

HHEVYK30	961960	2428	2 - 493	12180	Pro-76 to Ser-82, Ala-9 to Arg-15, Cys-17 to His-26, Gly-34 to Leu-43, Glu-58 to Lys-65, Gln-70 to Met-78, Val-147 to Asp-154.	H0486: 1, L0527: 1, H0521: 1 and H0543: 1.	
HHEVYK73	847483	2429	246 - 449	12181	Gln-2 to Asp-9, Arg-22 to Tyr-28, His-53 to Asn-59.	H0543: 2, H0069: 1 and H0635: 1.	
HHEVYP70	861923	2430	13 - 441	12182	Gln-1 to Gly-6, Leu-30 to Pro-41, Gly-100 to Gly-107, Lys-124 to Asn-131.	H0543: 2	
HHEVYQ78	963321	2431	61 - 246	12183	Ser-8 to Lys-15, Gln-30 to Thr-36.	H0581: 1 and H0543: 1.	8
HHEVYV03	922104	2432	238 - 390	12184	Ser-1 to Phe-6.	H0625: 1, L0740: 1 and H0543: 1.	
HHEVYZ12	968939	2433	1 - 150	12185	Gln-45 to Asp-50.	H0543: 2	
HHEVZA83	973236	2434	313 - 555	12186	Ile-1 to Gly-6, Pro-44 to Gln-52.	H0543: 3	
HHEVZJ38	860048	2435	331 - 471	12187	Val-1 to Asp-7.	L0455: 1, S0053: 1 and H0543: 1.	
HHEVZP45	952047	2436	47 - 148	12188	Met-1 to Arg-6.	H0543: 2	
HHEVZP54	952367	2437	57 - 236	12189		S0114: 1, H0521: 1, H0444: 1 and H0543: 1.	
HHEVHP14	960049	2438	2 - 208	12190	Arg-2 to Gln-8.	H0584: 21, H0167: 7 and H0050: 1.	
HILAA18	657314	2439	200 - 322	12191	Ser-2 to Arg-7.	T0002: 1, H0486: 1 and H0445: 1.	
HILBD61	504130	2440	102 - 377	12192	Lys-1 to Gly-7.	H0090: 2 and T0002: 1.	
HILCD94	887182	2441	419 - 595	12193	Met-1 to Arg-11, Asn-29 to Lys-34.	AR051: 42, AR054: 32, AR050: 31 L0766: 3, L0804: 2, T0002: 1, H0580: 1, L0662: 1, L0803: 1, L0805: 1, L0789:	

HJAAH06	960647	2442	2 - 370	12194	Arg-1 to Asn-10, Pro-17 to Lys-22, Thr-30 to Thr-57, Val-63 to Leu-69, Ser-79 to Arg-100.	1, L0749: 1 and L0779: 1. H0090: 1 and T0041: 1.		
HJAAH73	530476	2443	155 - 421	12195	Gln-1 to Ser-19, Glu-31 to Thr-36.	H0354: 1 and T0041: 1.		
HJAAH23	530472	2444	70 - 450	12196		L0749: 2, S0116: 1, L0717: 1, T0041: 1 and L0662: 1.		
HJAAU52	530473	2445	2 - 301	12197		H0306: 1, T0041: 1 and L0589: 1.	19q13.3	113900, 126340, 126391, 130410, 134790, 138570, 160900, 173850, 258501, 600040, 602225, 602225
HJAAU57	661275	2446	1 - 165	12198		T0041: 2		
HJAAV29	669278	2447	3 - 299	12199		S0218: 1, H0264: 1 and T0041: 1.		
HJAAV82	738993	2448	523 - 681	12200		H0591: 2, T0041: 1, L0745: 1 and L0777: 1.		
HJAAW39	530468	2449	114 - 272	12201		S0114: 1 and T0041: 1.		
HJAAW48	530641	2450	2 - 244	12202		H0063: 1 and T0041: 1.		
HJABB37	530467	2451	3 - 434	12203	Lys-5 to Asn-15, Pro-33 to Lys-38.	H0264: 1 and T0041: 1.		
HJABC27	669059	2452	2 - 253	12204	Pro-17 to Ile-22, Ile-39 to Arg-45.	S0134: 1 and T0041: 1.		
HJABH14	530463	2453	145 - 324	12205		T0041: 2		
HJABJ06	954589	2454	1 - 186	12206		H0264: 2 and T0041: 1.		
HJABP04	925557	2455	303 - 436	12207	Ser-6 to Gly-11, Asp-23 to Thr-32.	T0041: 1 and H0423: 1.		
HJABV44	871824	2456	325 - 537	12208	Lys-2 to His-10.	S0134: 1 and T0041: 1.		
HJABV57	839528	2457	145 - 2	12209	Lys-28 to Gly-36, Arg-43 to Arg-48.	T0041: 1 and S0002: 1.	14q24.3	104311, 109150, 182600, 245200, 601208
HJABW28	958721	2458	20 - 238	12210		H0305: 7, L0748: 2, H0583:		

HJABX33	966611	2459	214 - 438	12211		1, H0589: 1, L0471: 1, T0041: 1, H0134: 1 and L0589: 1.	
HJABY68	861548	2460	292 - 495	12212	Pro-4 to Lys-12, Arg-41 to Pro-57.	T0041: 1, H0521: 1 and L0600: 1.	
HJABZ52	857454	2461	37 - 276	12213	Arg-35 to Ser-41, Gly-59 to Thr-64, Cys-72 to Phe-77.	T0041: 2	
HJACB80	746411	2462	123 - 323	12214	Gln-25 to Arg-30.	H0630: 1, T0041: 1, L0766: 1, L0740: 1 and L0777: 1.	
HJACC59	534867	2463	19 - 321	12215		L0622: 1, S0182: 1, T0041: 1, L0789: 1 and L0749: 1.	
HJACC67	518222	2464	18 - 284	12216		T0041: 2	
HJACE47	589114	2465	6 - 152	12217	Cys-5 to Gln-10.	T0041: 2	
HJACE79	666768	2466	2 - 256	12218	Lys-6 to Leu-11.	H0265: 1, S0134: 1, H0486: 1 and T0041: 1.	
HJACF14	659329	2467	225 - 389	12219	Tyr-1 to His-6.	T0041: 2	
HJACF47	507156	2468	109 - 399	12220		S0116: 1 and T0041: 1.	
HJACH86	784634	2469	3 - 266	12221	Arg-1 to Gly-10, Ala-20 to Cys-27.	H0341: 1, T0041: 1, L0523: 1 and L0747: 1.	
HJADD60	708664	2470	97 - 216	12222		S0218: 1, H0580: 1 and T0041: 1.	
HJBAB01	961088	2471	51 - 305	12223	Arg-28 to Thr-33.	L0766: 4, S0114: 1, T0041: 1, S0002: 1 and S0426: 1.	
HJBAD34	508225	2472	51 - 134	12224	Pro-1 to Asn-12.	T0042: 1 and H0543: 1.	
HJBAG75	523069	2473	1 - 279	12225	Ala-19 to Ser-25, Glu-31 to Thr-38, Gly-47 to Gly-52, Phe-58 to Ser-72, Pro-75 to Ala-86.	T0042: 2	
HJBAT26	522697	2474	19 - 150	12226			
HJBAX43	929793	2475	73 - 288	12227	Asp-18 to Pro-26.	T0042: 2	
HJBB013	765075	2476	2 - 211	12228		H0341: 3 and T0042: 1.	
						AR061: 88, AR089: 72, AR051: 63, AR050: 45, AR054: 28	

HJBCP53	574259	2477	53 - 316	12229				H0486: 1 and T0042: 1.		
HJBD828	839067	2478	21 - 212	12230	Pro-6 to Asp-15.			T0042: 2		
HJBDG57	750669	2479	81 - 435	12231	Leu-13 to Arg-19, Ala-22 to Gln-29, Pro-38 to Arg-43, Gly-68 to Arg-76, Arg-91 to Trp-100, Thr-108 to Tyr-120.			T0042: 1 and S0426: 1. T0042: 2	3q21	106165, 117700, 117700, 150210, 169600, 180380, 180380, 180380, 190000, 203500, 232050, 276902, 600882, 601199, 601199, 601199, 601471, 601682
HJBDL14	960109	2480	89 - 361	12232	Ser-4 to Pro-16, Gly-23 to Ala-32.			H0305: 3, H0581: 1, T0042: 1, L0438: 1 and L0756: 1.		
HJCSB86	523007	2481	1 - 138	12233				H0202: 2 and H0203: 1.		
HJPAH35	509162	2482	203 - 301	12234				H0083: 2		
HJPAT51	730875	2483	179 - 271	12235	Lys-1 to Trp-13.			H0306: 1 and H0083: 1.		
HKBAC12	857298	2484	435 - 713	12236	Gly-28 to Thr-36.			H0264: 1 and H0625: 1.		
HKBACQ43	934251	2485	1 - 57	12237				H0625: 2		
HKBAT27	963724	2486	2 - 169	12238				H0380: 1, H0581: 1 and H0625: 1.		
HLADA25	791845	2487	13 - 219	12239				H0608: 4 and H0436: 4.		
HLADA89	786490	2488	1 - 483	12240	Pro-7 to Gln-13, Leu-30 to Asp-35, Pro-47 to Cys-64, Ser-86 to Asn-98.			H0638: 1, H0608: 1, H0611: 1 and L0362: 1.		
HLADB78	760896	2489	2 - 151	12241	Gly-29 to Arg-34.			L0766: 2, H0305: 1 and H0607: 1.		
HLAEO21	531287	2490	2 - 109	12242	Asp-31 to Gln-36.			H0073: 1 and H0521: 1.		
HLADB91	787578	2491	2 - 121	12243	Thr-16 to Ile-22.			H0609: 1 and H0610: 1.		
HLKDB22	766876	2492	614 - 850	12244	Asn-1 to Ser-8.			H0611: 2, L0749: 2, L0777: 2, L0764: 1 and H0522: 1.		
HLKDC49	722400	2493	412 - 582	12245	Glu-10 to Ile-20.			L0731: 2, H0611: 1, H0090: 1, L0659: 1, L0666: 1, L0752: 1 and H0543: 1.		
HLLCD11	967337	2494	2 - 334	12246				S0212: 1 and H0354: 1.		

HLMAC43	799766	2495	140 - 382	12247	Leu-10 to Pro-15, Arg-43 to Pro-50.	H0254: 3 and H0255: 2.	
HLMAE45	783886	2496	20 - 193	12248	Arg-12 to Ser-21.	H0556: 1, H0254: 1 and H0255: 1.	
HLMAE62	796676	2497	71 - 175	12249	Ser-1 to Val-7, Gly-17 to Gly-33.	H0254: 2 and H0255: 1.	
HLMAE83	530107	2498	2 - 238	12250	Cys-11 to Asp-20, Lys-62 to Ser-68.	H0254: 1 and H0255: 1.	
HLMAH45	954125	2499	59 - 289	12251	Gln-1 to Asn-6.	H0254: 2, L0754: 2, L0755: 2, L0761: 1 and L0776: 1.	
HLMAH60	856858	2500	2 - 121	12252	Lys-1 to Arg-12, Pro-29 to Leu-38.	H0254: 1 and H0255: 1.	
HLMAJ54	811183	2501	97 - 348	12253	Phe-9 to Gly-16.	H0254: 1 and H0255: 1.	
HLMAJ84	615300	2502	11 - 256	12254	Arg-6 to Ser-11.	H0254: 1 and H0421: 1.	
HLMAN25	677519	2503	101 - 166	12255	Pro-10 to Trp-17.	H0254: 1 and H0255: 1.	
HLMAU11	954571	2504	96 - 299	12256		H0254: 2	
HLMAU43	856884	2505	3 - 149	12257		H0254: 2	
HLMAU70	732665	2506	24 - 299	12258		H0254: 1 and H0255: 1.	
HLMAY62	671905	2507	48 - 140	12259	Thr-8 to Cys-13.	H0255: 2 and H0254: 1.	
HLMAZ06	960557	2508	151 - 312	12260	Ser-36 to His-45.	L0766: 2, H0254: 1, H0402: 1 and L0748: 1.	
HLMAZ14	932679	2509	119 - 262	12261	Lys-1 to Gly-14, Cys-17 to Phe-23, Glu-29 to Arg-46.	H0254: 2	
HLMAZ72	821500	2510	428 - 604	12262	Leu-20 to Gly-25, Glu-47 to Ser-59.	H0254: 1 and H0179: 1.	
HLMAZ91	920216	2511	129 - 251	12263	Glu-2 to Lys-8.	H0254: 1 and H0255: 1.	
HLMBB25	792549	2512	1 - 243	12264	Pro-49 to Lys-54, Arg-76 to Arg-81.	H0255: 2	
HLMBB43	530611	2513	3 - 212	12265	Glu-20 to Ser-34.	H0255: 2	
HLMBB56	968209	2514	1 - 192	12266	Gly-1 to Cys-7, Pro-29 to Asn-36, Gln-58 to Arg-64.	H0255: 6	
HLMBB77	799744	2515	206 - 343	12267		H0255: 2 and H0254: 1.	
HLMBB80	950730	2516	217 - 369	12268		H0255: 3	
HLMBF68	753614	2517	142 - 372	12269		S0114: 1 and H0255: 1.	

HLMBQ04	615621	2518	370 - 242	12270	Arg-8 to Gln-14, Ile-31 to Arg-43.	Arg-8 to Gln-14, Ile-31 to Arg-43.	H0255: 1 and H0445: 1.		
HLMBQ77	954969	2519	168 - 533	12271	Pro-26 to Pro-40.	Pro-26 to Pro-40.	H0457: 2, H0255: 1, H0580: 1, S0002: 1 and L0766: 1.		
HLMBU64	577608	2520	1 - 240	12272	Ala-10 to Gly-16, Tyr-53 to Ile-61.	Ala-10 to Gly-16, Tyr-53 to Ile-61.	H0255: 2		
HLMBU82	799755	2521	2 - 202	12273	Gly-1 to Cys-7, Leu-45 to Asn-51, Ser-53 to Pro-59.	Gly-1 to Cys-7, Leu-45 to Asn-51, Ser-53 to Pro-59.	H0255: 4		
HLMBV11	967669	2522	22 - 315	12274	Ser-8 to Arg-17, Arg-49 to Trp-59, Leu-67 to Gly-85.	Ser-8 to Arg-17, Arg-49 to Trp-59, Leu-67 to Gly-85.	H0255: 1 and H0422: 1.		
HLMBV14	682023	2523	130 - 366	12275	Gly-31 to Arg-36, Ser-50 to Tyr-58.	Gly-31 to Arg-36, Ser-50 to Tyr-58.	H0255: 2		
HLMBV24	825595	2524	4 - 180	12276	Gln-1 to Ser-6.	Gln-1 to Ser-6.	H0255: 3		
HLMBV72	683069	2525	182 - 307	12277			H0255: 2		
HLMBW11	950728	2526	33 - 782	12278	Arg-41 to Phe-47, Gln-51 to Gly-56, Arg-64 to Asn-73, Leu-86 to Lys-96, Pro-98 to Val-111, Thr-119 to Met-124, Gln-126 to Trp-166, Cys-168 to Thr-177, Ser-214 to Leu-220, Gln-229 to Trp-244.	Arg-41 to Phe-47, Gln-51 to Gly-56, Arg-64 to Asn-73, Leu-86 to Lys-96, Pro-98 to Val-111, Thr-119 to Met-124, Gln-126 to Trp-166, Cys-168 to Thr-177, Ser-214 to Leu-220, Gln-229 to Trp-244.	H0255: 2 and L0766: 2.		
HLMBX06	954576	2527	93 - 316	12279	Pro-62 to Ser-67.	Pro-62 to Ser-67.	H0265: 2, H0556: 2, H0255: 2 and H0423: 1.		
HLMBX19	879667	2528	1 - 246	12280			H0255: 2		
HLMBY16	531053	2529	1 - 156	12281	Lys-1 to Gly-11, Ser-17 to Ala-26.	Lys-1 to Gly-11, Ser-17 to Ala-26.	H0255: 2		
HLMBZ31	967640	2530	7 - 123	12282	Pro-6 to Gly-14.	Pro-6 to Gly-14.	H0255: 2		
HLMBZ47	577605	2531	79 - 201	12283	Gln-16 to Met-21.	Gln-16 to Met-21.	H0255: 1 and H0402: 1.		
HLMBZ73	531401	2532	28 - 222	12284			H0255: 2		
HLMCA13	790952	2533	118 - 411	12285	Thr-32 to Lys-37, Thr-52 to His-60.	Thr-32 to Lys-37, Thr-52 to His-60.	H0254: 1, S0216: 1 and L0439: 1.		

HLMCA22	529185	2534	59 - 205	12286		H0254: 2	
HLMCJ32	799767	2535	183 - 350	12287		H0254: 3 and H0255: 2.	
HLMCJ64	739397	2536	208 - 321	12288	Gln-21 to Asn-37.	H0254: 1 and H0255: 1.	
HLMCJ66	707231	2537	1 - 96	12289		H0254: 2	
HLMCK45	698342	2538	84 - 281	12290	Gly-3 to Gln-9.	H0254: 1, H0255: 1 and H0271: 1.	
HLMCL50	921041	2539	14 - 193	12291	Lys-21 to Lys-29.	H0254: 2	
HLMCL93	799699	2540	3 - 371	12292	Trp-8 to Pro-14, Thr-85 to Gly-91.	H0254: 2, H0556: 1, S0116: 1, H0255: 1 and L0604: 1.	
HLMCT06	954615	2541	3 - 131	12293		H0254: 2 and H0255: 2.	
HLMCT15	507212	2542	79 - 258	12294	His-50 to Lys-55.	H0254: 2	
HLMCT24	921543	2543	59 - 217	12295	His-33 to Arg-41.	H0254: 3 and H0255: 1.	
HLMCT79	916590	2544	64 - 180	12296	Arg-16 to Gln-25.	H0254: 1 and H0255: 1.	
HLMCT93	888976	2545	129 - 290	12297	Ser-44 to Gln-49.	AR051: 20, AR050: 19, AR054: 10	
HLMDE76	529184	2546	5 - 106	12298		H0254: 1 and H0255: 1.	
HLMDF04	694910	2547	2 - 67	12299		H0254: 2	
HLMDF14	799739	2548	201 - 383	12300		H0255: 2 and H0254: 1.	
HLMDF52	571415	2549	54 - 182	12301	Gln-17 to Pro-26.	H0254: 1 and H0255: 1.	
HLMDF54	527128	2550	353 - 475	12302	Val-33 to Ser-40.	H0254: 2, S0114: 1 and H0422: 1.	
HLMDF78	532741	2551	1 - 261	12303		H0254: 2	14q11.2
							182600, 186880, 190195, 190195, 222700, 600243, 602279, 602279
HLMDF37	577239	2552	60 - 365	12304		H0254: 1 and H0255: 1.	
HLMDF48	720893	2553	2 - 205	12305	His-6 to Gly-16, Phe-23 to Leu-38, Gly-56 to Ser-64.	H0254: 1 and H0255: 1.	
HLMDF83	799742	2554	23 - 352	12306	Pro-9 to Trp-15, Lys-63 to Tyr-74.	H0255: 2 and H0254: 1.	
HLMDF02	920859	2555	3 - 149	12307	Gln-9 to Lys-15, Gln-27 to Lys-33, Ser-38 to His-43.	H0254: 2 and H0255: 1.	
HLMDF018	527896	2556	2 - 148	12308	Gly-17 to Gly-29.	H0254: 2	



HLMD061	584982	2557	20 - 103		Arg-41 to Gln-49.		
HLMD065	742749	2558	3 - 419	12309 12310	Lys-1 to Asn-6. His-1 to Thr-6, Phe-19 to Arg-25, Pro-44 to Leu-54, Lys-57 to Asn-64.	H0254: 2 H0254: 1 and H0255: 1.	
HLMDP35	535500	2559	2 - 259	12311		H0254: 2	
HLMDQ37	531232	2560	2 - 121	12312		H0254: 2	
HLMDQ40	531234	2561	3 - 200	12313	Pro-4 to Ser-16, Gln-59 to Gln-64.	H0254: 1 and H0255: 1.	
HLMDQ60	920837	2562	168 - 380	12314	Arg-29 to Tyr-34.	H0254: 2 and H0255: 1.	
HLMDR16	530103	2563	2 - 127	12315	Ala-12 to Val-17.	H0254: 2	
HLMDR33	959707	2564	235 - 429	12316		H0255: 3 and H0254: 2.	
HLMDR70	531235	2565	17 - 106	12317		H0254: 2	
HLMDT17	531231	2566	5 - 145	12318		H0254: 2	
HLMDU04	571393	2567	3 - 170	12319	Gly-10 to His-21.	H0254: 1 and H0255: 1.	
HLMDU07	930471	2568	103 - 297	12320	Gln-52 to Tyr-62.	H0254: 1, H0255: 1 and L0794: 1.	
HLMDU17	528040	2569	3 - 233	12321	Glu-17 to Pro-26.	H0254: 2	
HLMDU43	575607	2570	2 - 373	12322		L0769: 3, S0052: 2, H0254: 1, H0255: 1, S0002: 1, L0639: 1, L0761: 1, L0800: 1, L0641: 1 and L0794: 1. H0254: 1 and H0255: 1.	
HLMDU54	856877	2571	112 - 324	12323	Pro-18 to Arg-46.	AR089: 2, AR061: 1 H0254: 2	
HLMDU71	531228	2572	1 - 132	12324			
HLMDU96	799729	2573	99 - 269	12325	Val-6 to Pro-11.	H0254: 2 and H0255: 1.	
HLMDV96	934543	2574	600 - 788	12326	Ser-33 to Cys-39.	S0216: 2, S0114: 1, H0254: 1, H0255: 1, H0635: 1, H0271: 1, L0748: 1 and H0423: 1.	
HLMDW28	531230	2575	253 - 29	12327		H0254: 2	
HLMDW58	799749	2576	20 - 295	12328	Cys-16 to Lys-23.	H0254: 3	
HLMDX46	523771	2577	85 - 210	12329	Thr-14 to Val-25, Lys-31 to Thr-42.	H0254: 2	
HLMDX59	739523	2578	122 - 418	12330		H0254: 1 and H0305: 1.	

HLM DX71	799758	2579	3 - 215	12331	Gln-1 to Leu-25, Ala-66 to Trp-71.	H0254: 2 and H0255: 2.
HLM DY24	531219	2580	174 - 422	12332	Gly-3 to Thr-11, Gln-14 to His-20, Gln-46 to Ser-57.	H0254: 2
HLM DY48	666518	2581	1 - 132	12333	Gly-1 to Ala-7, Phe-9 to Thr-15.	H0254: 1 and H0255: 1.
HLM DY56	518410	2582	2 - 106	12334		H0254: 2
HLM FA56	730947	2583	35 - 217	12335		H0255: 2
HLM FA72	531359	2584	43 - 267	12336		H0255: 2
HLM FB38	577643	2585	87 - 242	12337	Asp-1 to Ser-10.	H0255: 2
HLM FD75	799682	2586	2 - 307	12338	Ser-4 to Ser-12.	H0264: 3 and H0255: 1.
HLM FG58	573130	2587	357 - 169	12339	Leu-1 to Gln-7.	H0255: 1 and S0052: 1.
HLM FG66	676040	2588	3 - 389	12340	His-1 to Leu-8, Gln-54 to Ala-61, Gln-91 to Leu-100.	H0255: 2
HLM FH74	671941	2589	156 - 329	12341	Ile-11 to Arg-17.	H0255: 2
HLM FI89	526929	2590	2 - 184	12342	Lys-15 to Arg-20.	H0255: 2
HLM FK45	531222	2591	112 - 252	12343		H0254: 1 and H0255: 1.
HLM FK63	888660	2592	1 - 588	12344	Arg-8 to Gly-17.	AR051: 139, AR050: 138, AR054: 114 H0255: 3
HLM FK70	856861	2593	67 - 201	12345	Ser-23 to Trp-31.	H0254: 1 and H0255: 1.
HLM FK92	571369	2594	143 - 373	12346	Gln-1 to Ala-6.	H0255: 2
HLM FL71	526928	2595	113 - 367	12347		H0255: 2
HLM FN24	781780	2596	3 - 326	12348		H0254: 1 and H0255: 1.
HLM FN68	799751	2597	2 - 226	12349		H0255: 2 and H0254: 1.
HLM FR49	842045	2598	33 - 179	12350		H0255: 2
HLM FR72	799709	2599	3 - 215	12351		H0255: 3, L0745: 2 and L0383: 1.
HLM FU09	909666	2600	22 - 216	12352	Gly-18 to Arg-23.	H0625: 2, H0254: 1, H0255: 1, H0576: 1 and L0749: 1.
HLM FU13	657283	2601	87 - 209	12353	Lys-29 to Leu-40.	H0255: 2
HLM FU39	856872	2602	143 - 340	12354	Gln-8 to Val-13.	L0439: 2, H0255: 1, L0021: 1, H0318: 1, L0655: 1.

HLMFU52	727197	2603	2 - 331	12355			S0428: 1, L0352: 1 and H0423: 1.	
HLMFU90	699667	2604	15 - 200	12356	Pro-47 to His-53.		H0255: 2	
HLMFU19	534799	2605	3 - 197	12357	Asn-29 to Thr-34.		H0254: 1 and H0255: 1.	
HLMGK40	531355	2606	163 - 351	12358	Leu-12 to Arg-17.		H0254: 1 and H0255: 1.	
HLMGK50	927675	2607	36 - 233	12359	Asn-44 to Arg-51.		H0254: 1 and H0255: 1.	
HLMGK66	799725	2608	105 - 302	12360			H0255: 1 and L0766: 1.	
HLMGK96	531225	2609	17 - 160	12361			H0255: 3	
HLMGY13	921457	2610	163 - 294	12362			H0254: 1 and H0255: 1.	
HLMGZ09	625638	2611	162 - 302	12363	His-15 to Arg-21.		H0255: 2	
HLMGZ33	805813	2612	125 - 232	12364	Gly-13 to Thr-26.		H0254: 2, H0255: 2 and L0766: 1.	
HLMHG65	799736	2613	3 - 149	12365			H0254: 2 and H0255: 1.	
HLMHG83	799770	2614	68 - 244	12366	Ser-6 to Glu-14.		H0255: 6	
HLMHG84	572412	2615	99 - 1	12367			H0254: 1 and H0255: 1.	
HLMHG39	823450	2616	1 - 354	12368	Pro-7 to His-14.		H0255: 2 and H0271: 1.	
HLMHG40	878117	2617	48 - 338	12369			H0255: 2	
HLMHG57	714813	2618	3 - 299	12370	Thr-12 to Pro-17, Arg-24 to Asp-30, Gly-53 to Gly-62.		H0255: 2 and L0744: 1.	
HLMHK16	571414	2619	3 - 329	12371			H0254: 1 and H0255: 1.	
HLMHK38	799782	2620	208 - 450	12372			H0255: 3 and H0254: 1.	
HLMHK61	856848	2621	1 - 255	12373	Ala-23 to Gly-38, Ser-59 to Gly-65.		H0254: 1 and H0255: 1.	
HLMHK62	579101	2622	57 - 188	12374	Ala-5 to Pro-11.		H0255: 2	
HLMH160	778481	2623	62 - 187	12375			H0254: 1 and H0255: 1.	
HLMHM63	578838	2624	35 - 175	12376			H0255: 2	
HLMHN21	516580	2625	141 - 416	12377			H0063: 2 and H0255: 1.	
HLMHN27	856846	2626	2 - 202	12378	Val-17 to Gly-24.		H0255: 1 and S0053: 1.	
HLMHN31	925730	2627	103 - 300	12379	Ser-16 to Asn-26.		L0766: 3, L0599: 2, H0657: 1, H0656: 1, H0255: 1, H0318: 1, L0779: 1, H0445: 1 and H0422: 1.	

HLMHN37	723081	2628	2 - 238	12380		Ser-38 to Gly-49.	H0255: 2 and H0254: 1.
HLMHN45	668906	2629	1 - 270	12381			H0255: 2
HLMH011	964945	2630	62 - 139	12382		His-17 to Trp-25.	H0254: 1 and H0255: 1.
HLMH021	799772	2631	17 - 238	12383		Pro-2 to Tyr-11, Pro-13 to Arg-19.	H0254: 2 and H0255: 2.
HLMH033	799756	2632	116 - 325	12384			H0255: 3 and H0254: 1.
HLMH067	967636	2633	11 - 355	12385		Ala-6 to Pro-12, Asp-36 to Ser-61.	H0255: 2 and H0254: 1.
HLMH074	953956	2634	93 - 293	12386		Pro-18 to Val-37, Arg-44 to Gly-51.	H0255: 2
HLMH025	920711	2635	51 - 311	12387		Ser-1 to Pro-12, Ser-28 to Tyr-38.	H0255: 2
HLMH055	825530	2636	1 - 216	12388			H0255: 1 and H0264: 1.
HLMH031	752375	2637	140 - 322	12389			H0255: 2 and H0254: 1.
HLMH041	574741	2638	3 - 143	12390			H0255: 2
HLMH066	574742	2639	267 - 404	12391			L0777: 4, H0255: 2, S0114: 1, L0803: 1, L0780: 1 and L0759: 1.
HLMH077	579048	2640	33 - 149	12392		Ala-12 to Arg-21.	H0255: 2
HLMH094	531054	2641	156 - 284	12393			H0254: 1 and H0255: 1.
HLMH080	799723	2642	52 - 294	12394			H0255: 3
HLMH031	536579	2643	90 - 239	12395		Ser-21 to Val-30.	H0254: 1 and H0255: 1.
HLMH064	866458	2644	2 - 244	12396		Gly-3 to Lys-8.	AR054: 41, AR051: 38, AR050: 33 H0305: 3 and H0255: 2.
HLMH071	971675	9568	3 - 287	19320			
HLMH074	799774	2645	51 - 146	12397		Leu-6 to Pro-24.	H0255: 2 and H0254: 1.
HLMH029	530071	2646	2 - 121	12398			H0254: 1 and H0255: 1.
HLMH094	710391	2647	28 - 234	12399		Thr-23 to Phe-29, Glu-59 to Gly-67.	H0254: 2 and H0255: 1.
HLMH070	578795	2648	1 - 240	12400		Asn-12 to Arg-21, Gly-54 to Arg-67, Ser-72 to Gly-79.	H0255: 2
HLMH022	572424	2649	13 - 120	12401			H0254: 1 and H0255: 1.
HLMH011	967291	2650	2 - 166	12402		Asn-1 to Ser-13.	H0255: 2

HLMIG50	856845	2651	52 - 447	12403	Val-1 to His-14, Arg-16 to Asn-26.	H0255: 2 and L0523: 1.	
HLMIG72	799747	2652	201 - 329	12404	Gln-15 to Asp-20.	H0254: 2 and H0255: 1.	
HLMIH10	964890	2653	218 - 400	12405		H0255: 3	
HLMIH44	883871	2654	178 - 396	12406		H0255: 3 and L0589: 1.	
HLMIL62	799713	2655	253 - 414	12407	Gly-31 to Thr-36.	H0255: 3	
HLMIM73	576692	2656	19 - 174	12408		H0255: 2, S0218: 1 and H0402: 1.	
HLMIO47	531224	2657	34 - 138	12409		H0254: 1 and H0255: 1.	
HLMIP23	686670	2658	14 - 391	12410		L0748: 4, H0254: 1, H0255: 17 1, L0787: 1 and L0741: 1.	
HLMIQ11	921009	2659	471 - 785	12411	Ala-34 to Asp-42, Arg-44 to Trp-50, Arg-57 to Arg-64.	L0766: 6, H0402: 3, H0305: 2, H0542: 2, H0254: 1, H0255: 1, H0306: 1, H0581: 1, S0052: 1, L0754: 1, L0749: 1, H0444: 1, H0445: 1 and H0543: 1.	
HLMIQ72	715650	2660	39 - 269	12412	Pro-32 to Ser-40.	H0255: 2, H0254: 1 and H0187: 1.	
HLMIQ73	764522	2661	229 - 399	12413		H0254: 1 and H0255: 1.	
HLMIQ93	576657	2662	1 - 186	12414	Arg-31 to Gly-40.	H0255: 2	
HLMIR23	916938	2663	22 - 337	12415		H0255: 3 and H0254: 1.	
HLMIR40	578756	2664	51 - 227	12416	Gln-48 to Gln-53.	H0255: 2	
HLMIS03	924651	2665	16 - 192	12417	Ser-14 to Ala-20.	H0254: 2 and H0255: 1.	
HLMIS16	572430	2666	131 - 268	12418		H0254: 1 and H0255: 1.	
HLMIS64	572509	2667	77 - 193	12419		H0254: 1 and H0255: 1.	
HLMIS77	971141	2668	6 - 167	12420		H0255: 2	
HLMIS85	578751	2669	165 - 251	12421		H0254: 1 and H0255: 1.	
HLMIS89	572506	2670	2 - 163	12422	Pro-45 to Ile-54.	H0255: 3	
HLMIT37	799711	2671	233 - 60	12423		H0254: 2, L0755: 2, H0255: 1 and S0052: 1.	
HLMIT43	799705	2672	99 - 308	12424	Gln-2 to Leu-19.		
HLMIT76	856860	2673	235 - 372	12425	Arg-2 to Gln-9.	H0255: 2, H0254: 1 and L0748: 1.	
HLMIV09	799740	2674	57 - 404	12426	Gln-1 to Cys-12.	H0255: 2 and H0254: 1.	

HLMW07	871698	2675	292 - 122	12427	Gln-27 to Phe-51, Gly-69 to Arg-76.	H0255: 3	
HLMW89	799753	2676	1 - 201	12428	Gly-1 to Gln-7.	H0255: 2 and H0254: 1.	
HLMW90	920464	2677	144 - 323	12429	Asp-13 to Gln-18.	H0255: 3 and H0254: 1.	
HLMIX61	727730	2678	114 - 389	12430	Arg-1 to Ala-6, Pro-11 to Gln-19, Cys-58 to Pro-64.	S0114: 1, H0255: 1 and L0744: 1.	
HLMIX95	960056	2679	59 - 265	12431	Ile-7 to Gln-13, Gln-30 to Asn-35.	H0254: 1, H0255: 1, L0769: 1, L0439: 1 and L0777: 1.	
HLMIX56	571401	2680	76 - 252	12432	Arg-1 to Ala-6, Pro-11 to Gln-19, Cys-58 to Pro-64.	H0254: 2 and H0255: 2.	
HLMIZ02	920426	2681	3 - 203	12433	His-10 to Trp-21, Met-23 to Ser-29, Gly-36 to Ser-41.	H0255: 1.	
HLMIZ25	825087	2682	1 - 135	12434	Arg-1 to Pro-6, His-18 to Gly-27.	S0212: 1, H0254: 1 and H0255: 1.	
HLMIZ40	715586	2683	70 - 255	12435	Pro-43 to Trp-52, Ser-56 to Val-62.	H0254: 1 and H0255: 1.	
HLMJA05	932173	2684	173 - 346	12436	Arg-1 to Pro-6, His-18 to Gly-27.	H0255: 2	
HLMJA30	955980	2685	3 - 359	12437	Gly-1 to His-19, Cys-78 to Gln-85.	H0255: 3	
HLMJA66	799731	2686	227 - 355	12438	Lys-14 to Ser-28, His-41 to Arg-47.	H0255: 1 and H0063: 1.	
HLMJA83	712447	2687	100 - 456	12439	Arg-18 to Trp-26, Asn-56 to Arg-67.	H0255: 2	
HLMJB04	968284	2688	29 - 166	12440	Arg-11 to Arg-19, Cys-29 to Met-38.	H0255: 1 and H0607: 1.	
HLMJB23	578827	2689	3 - 170	12441	Arg-63 to Trp-68, Pro-70 to Leu-75.	H0341: 1 and H0255: 1.	
HLMJB60	924974	2690	102 - 260	12442	Gly-1 to Gly-10, His-22 to Ser-34,Gly-39 to Asp-55.	H0657: 1, H0255: 1, H0318: 1 and H0445: 1.	
HLMJC35	576944	2691	2 - 226	12443			
HLMJC76	770177	2692	71 - 286	12444			
HLMMA16	576612	2693	91 - 321	12445			
HLMMA52	920292	2694	1 - 384	12446			

						His-76 to Gln-94, Pro-96 to Glu-113.			
HLMMMA76	799741	2695	82 - 339	12447					
HLMMMC72	760717	2696	104 - 316	12448		Phe-16 to His-24, Glu-27 to Lys-37, Leu-44 to Asp-55.		H0255: 3 H0255: 2	
HLMMMD05	932127	2697	97 - 414	12449		Ser-1 to Ser-11.		H0265: 1 and H0255: 1.	
HLMMMD26	799743	2698	142 - 258	12450		Thr-13 to Leu-18, Arg-20 to His-25.		H0255: 3	
HLMMMD28	959900	2699	17 - 154	12451		Leu-6 to Asn-22.		H0255: 3	
HLMMMD89	920442	2700	163 - 2	12452		Lys-1 to Asn-7, Gly-36 to Gln-53.		H0255: 3	
HLMMME77	710989	2701	82 - 195	12453				H0255: 1 and H0445: 1.	
HLMMMF24	677303	2702	191 - 370	12454				L0750: 1.	
HLMMMF82	571403	2703	3 - 275	12455				H0255: 2	
HLMMMG02	920427	2704	182 - 364	12456				H0255: 2	
HLMMMG23	881361	2705	94 - 345	12457				H0255: 2	
HLMMMI18	666575	2706	28 - 222	12458		Tyr-1 to Asp-7.		H0255: 1 and H0264: 1.	
HLMMMI86	678672	2707	1 - 222	12459		Pro-16 to Glu-22.		H0255: 2	
HLMMJ08	959630	2708	187 - 417	12460				H0255: 1 and S0052: 1.	
HLMMJ37	577571	2709	91 - 366	12461		Asp-1 to Arg-6, His-8 to His-14, His-33 to Pro-43.		H0255: 2	
HLMMMK28	577670	2710	14 - 427	12462		Glu-86 to Asp-94.		H0255: 2	
HLMMMK39	576167	2711	33 - 188	12463				H0255: 2, L0518: 1 and L0758: 1.	
HLMMMN01	657354	2712	3 - 278	12464				H0255: 2 and L0771: 1.	
HLMMMN32	576180	2713	3 - 227	12465		Pro-13 to Ser-25, Cys-32 to His-37, Arg-60 to Met-66.		H0255: 2	
HLMMNN91	795915	2714	2 - 319	12466				H0255: 2	
HLMMO61	740655	2715	3 - 275	12467		Thr-50 to Pro-55, Ala-60 to Trp-69.		H0255: 2	
HLMMMP25	576166	2716	79 - 291	12468				H0255: 2 and L0761: 1.	17q11.2
									154275, 162200.

HLMMMP68	799715	2717	56 - 364	12469	Arg-38 to Lys-44.	H0255: 3	162200, 182138, 239100, 600881, 601954, 602403
HLMMMP69	754221	2718	26 - 307	12470		H0255: 2	
HLMMMP75	870036	2719	49 - 288	12471	Gln-1 to Met-11.	H0255: 4	
HLMMMP88	793125	2720	93 - 470	12472	Cys-45 to Arg-50, Ala-72 to Leu-78.	S0052: 3, H0255: 1 and S0053: 1.	
HLMMR20	799720	2721	158 - 328	12473	Asp-3 to Pro-15.	H0255: 3	
HLMMR39	711503	2722	85 - 234	12474		H0255: 2	
HLMMR45	799771	2723	169 - 447	12475	Thr-9 to Arg-15.	H0255: 5	
HLMMT08	959578	2724	326 - 685	12476		H0255: 1, H0416: 1 and L0749: 1.	
HLMMT22	799737	2725	60 - 233	12477		H0255: 3	
HLMMT72	799719	2726	205 - 336	12478	Pro-19 to Cys-29.	H0255: 3	
HLMMT74	506234	2727	36 - 254	12479	Ala-20 to Gly-28.	H0255: 2	
HLMMT76	578143	2728	141 - 308	12480		H0255: 2	
HLMMU42	424663	2729	33 - 272	12481		H0255: 2, S0426: 1, L0518: 1 and L0748: 1.	
HLMMV25	799718	2730	111 - 317	12482		H0255: 3 and L0749: 1.	
HLMMV63	463919	2731	153 - 530	12483		H0255: 2 and S0052: 1.	
HLMMV65	799706	2732	153 - 329	12484		H0255: 3 and S0053: 1.	
HLMMV66	926188	2733	218 - 448	12485		AR061: 7, AR089: 5 H0255: 2, L0493: 2 and L0662: 1.	
HLMMW06	935621	2734	2 - 145	12486	Gly-8 to Lys-13.	H0255: 2	
HLMMW07	953833	2735	41 - 310	12487	Val-43 to Asp-52, Glu-79 to Asn-84.	H0255: 2	
HLMMW29	577160	2736	63 - 305	12488		H0255: 2	
HLMMW33	702478	2737	30 - 212	12489	Glu-19 to Ser-34.	H0255: 2	
HLMMW37	577153	2738	3 - 347	12490	His-1 to Gly-19, Pro-44 to Gly-51, Pro-65 to Gly-70, Ser-75 to Gly-82.	H0255: 2	
HLMMW44	716797	2739	130 - 291	12491	Ala-33 to Leu-45.	H0255: 2	



HLMMW55	815997	2740	2 - 229	12492			H0255: 2
HLMMW71	761346	2741	2 - 103	12493	Glu-13 to Arg-22.		H0255: 2
HLMMW77	577150	2742	112 - 273	12494	Pro-10 to Gly-20, Glu-23 to Arg-30.		H0255: 2
HLMMX19	861317	2743	574 - 362	12495	Trp-1 to Gln-7, Pro-10 to Gly-17.		H0255: 2 and S0426: 1.
HLMMX57	734985	2744	123 - 293	12496	Glu-10 to Gly-25, Ser-44 to Leu-56.		H0255: 2
HLMMX72	760651	2745	1 - 234	12497	Gly-1 to Pro-7.		H0255: 2
HLMMX73	764455	2746	2 - 250	12498	Ala-1 to Ser-8, Met-23 to His-30.		H0255: 2
HLMMX85	783429	2747	90 - 206	12499	Thr-1 to Leu-10, Thr-33 to Lys-39.		H0255: 2
HLMMY01	916636	2748	261 - 557	12500			H0255: 3 and L0774: 1.
HLMMY03	924511	2749	107 - 355	12501	Leu-10 to Asn-25, Pro-36 to Asp-55.		H0255: 2
HLMMZ13	856802	2750	250 - 432	12502	Gln-25 to Ser-33.		H0255: 2
HLMMZ16	927659	2751	3 - 155	12503	Arg-27 to Asn-42.		H0255: 2 and H0341: 1.
HLMNA14	918207	2752	159 - 692	12504			L0595: 3, L0769: 2, L0779: 2, H0556: 1, H0255: 1, L0794: 1 and L0783: 1.
HLMNA84	577572	2753	131 - 343	12505	Pro-44 to Gly-49		L0777: 4 and H0255: 2.
HLMNA88	856809	2754	106 - 306	12506	Leu-56 to Ala-64.		H0255: 2
HLMNA91	765862	2755	75 - 386	12507	Arg-11 to Gly-20, Cys-22 to Val-34, Ala-57 to Lys-62, Val-64 to Pro-79.	3	H0255: 2
HLMNB08	959559	2756	2 - 361	12508	Ala-3 to Glu-8.		H0255: 2
HLMNB94	575838	2757	67 - 186	12509			H0255: 2
HLMNE84	760695	2758	34 - 222	12510			H0255: 2
HLMNG08	876147	2759	164 - 508	12511	Ala-42 to Gly-48, Ala-50 to Met-60, Gln-80 to Glu-91.		L0599: 4, H0255: 1, H0318: 1, L0761: 1, L0655: 1, L0517: 1 and H0543: 1.
HLMNG68	921008	2760	120 - 263	12512			H0255: 1 and H0445: 1.
HLMNH23	787043	2761	168 - 422	12513			H0255: 2
HLMNH25	575921	2762	183 - 407	12514	Trp-26 to Trp-32.		H0255: 2, L0748: 1 and

HLMN137	920361	2763	38 - 253	12515	Lys-2 to Gly-10.	L0745: 1.
HLMN169	531356	2764	1 - 180	12516		H0255: 2
HLMN101	835623	2765	112 - 270	12517	Val-36 to Tyr-43.	H0255: 2
HLMN106	935626	2766	7 - 177	12518	Pro-27 to Ile-35.	H0255: 2, L0060: 1 and L0766: 1.
HLMN108	839948	2767	2 - 205	12519	Lys-1 to Arg-6.	H0255: 2
HLMN123	675970	2768	147 - 335	12520	Arg-25 to Leu-35.	H0255: 2
					Lys-41 to Leu-46.	
HLMN155	964739	2769	135 - 281	12521	Arg-23 to Ser-28.	H0255: 2
HLMN157	575900	2770	3 - 104	12522		H0255: 2
HLMN164	578627	2771	74 - 271	12523		H0255: 2
HLMN119	668746	2772	238 - 441	12524	Tyr-4 to His-9.	H0255: 2
HLMN139	577649	2773	1 - 213	12525		H0255: 2
HLMN144	577106	2774	72 - 197	12526		H0255: 1, H0306: 1 and L0369: 1.
HLMN161	575889	2775	200 - 355	12527		H0255: 2
HLMN102	920296	2776	2 - 400	12528	Gln-8 to His-15, Gly-30 to Lys-36, Ser-41 to Lys-49.	H0255: 2
HLMN102	968377	2777	253 - 456	12529	Lys-36 to Arg-41.	H0255: 2, L0809: 2, L0766: 1 and L0599: 1.
HLMN1035	575906	2778	14 - 217	12530	Gln-20 to Gln-25.	H0255: 3
HLMN127	752366	2779	93 - 272	12531	His-1 to Ser-8.	H0255: 3
					Arg-24 to Ser-30.	
HLMN162	745733	2780	191 - 253	12532	Pro-11 to Gly-21.	H0255: 2
HLMN173	577693	2781	1 - 390	12533	Gly-1 to Leu-15.	H0255: 2, H0305: 2 and H0556: 1.
					Pro-23 to Asp-35, Leu-55 to Arg-63.	
HLMN104	577157	2782	3 - 251	12534	Arg-35 to Ser-42.	H0255: 2
HLMN106	799745	2783	3 - 290	12535		H0255: 3
HLMN115	660316	2784	2 - 166	12536		H0255: 2
HLMN133	702477	2785	180 - 404	12537	Ala-22 to Pro-28.	H0255: 2
HLMN174	765800	2786	147 - 260	12538	Gln-10 to Leu-15.	H0255: 2

HLNSF63	509519	2787	184 - 351	12539			H0108: 2		
HLNSG27	684650	2788	100 - 252	12540		Pro-4 to Ala-9, Glu-33 to Ala-51.	L0748: 5, L0751: 2, H0486: 12 1, H0108: 1, H0318: 1, L0790: 1 and L0594: 1.		
HLTAA66	503025	2789	18 - 308	12541		Ser-13 to Ser-18.	H0090: 2		
HLTAA94	503019	2790	135 - 275	12542		Glu-12 to Thr-17.	H0090: 2		
HLTAI12	971523	2791	173 - 487	12543		Arg-71 to Val-79.	L0777: 5, H0090: 2, L0743: 2, L0803: 1, L0774: 1, L0784: 1, L0742: 1, L0747: 1, L0749: 1, L0756: 1 and L0779: 1.		
HLTAI56	960750	2792	42 - 188	12544			H0090: 2		
HLTAI59	508603	2793	3 - 83	12545		Lys-17 to Pro-24.	H0090: 2		
HLTAR67	578467	2794	3 - 200	12546		Pro-39 to Gly-50.	H0416: 1 and H0090: 1.		
HLTAR90	524360	2795	3 - 182	12547		Pro-3 to Leu-17, Glu-31 to Lys-42.	H0090: 3		
HLTAT22	508592	2796	170 - 328	12548		Lys-32 to Ser-37.	H0090: 2		
HLTA793	575133	2797	192 - 323	12549		Lys-19 to Gly-24.	H0090: 2		
HLTAU67	703103	2798	1 - 234	12550			H0090: 2		
HLTAW36	536674	2799	121 - 294	12551		Leu-1 to Phe-9.	H0090: 2		
HLTAW69	753707	2800	1 - 516	12552		Glu-16 to Leu-25, Tyr-36 to Asn-41, Ser-51 to Lys-56, Ser-59 to Ser-72, Val-104 to Thr-129, Arg-139 to Asn-151.	H0090: 1 and H0423: 1.		
HLTBL46	508925	2801	127 - 321	12553			S0114: 1 and H0090: 1.		
HLTBN29	703295	2802	2 - 253	12554		Glu-21 to Arg-26, Glu-28 to Thr-35.	H0421: 1 and H0090: 1.		
HLTBO49	839804	2803	48 - 260	12555		Leu-11 to Leu-17.	L0005: 4 and H0090: 2.		
HLTBU04	928005	2804	209 - 403	12556		Asp-36 to Ser-43.	H0090: 3		
HLTBW51	522881	2805	10 - 171	12557			H0090: 2		
HLTBX34	856609	2806	1 - 168	12558		Leu-25 to Ser-32.	H0583: 1 and H0090: 1.		
HLTCL66	417344	2807	2 - 265	12559		Ser-6 to Leu-16.	H0090: 1 and H0522: 1.		
HLTCM12	888630	2808	30 - 248	12560		Pro-13 to Met-18.	AR054: 1, AR050: 0 H0090: 4		

HLTCQ51	725845	2809	105 - 314	12561	Ile-4 to Pro-14, Glu-18 to Tyr-31, Gly-53 to Val-60.	H0090: 1 and H0488: 1.		
HLTCR55	839556	2810	56 - 244	12562		L0748: 7, H0090: 2, H0264: 1, S0052: 1, L0749: 1 and H0445: 1.		
HLTCV75	766511	2811	72 - 230	12563		L0731: 2, H0611: 1, H0090: 1, L0659: 1, L0666: 1, L0752: 1 and H0543: 1.		
HLTCU58	625309	2812	11 - 211	12564	Lys-21 to Glu-26.	H0090: 3		
HLTCV43	715525	2813	81 - 368	12565	Glu-1 to Ser-17, Ala-19 to Ser-27.	H0090: 3		
HLTCV57	535289	2814	1 - 198	12566		H0090: 2		
HLTCV63	574712	2815	2 - 103	12567	Arg-29 to Thr-34.	H0090: 2		
HLTCZ25	574704	2816	20 - 124	12568	Lys-6 to Tyr-15.	H0090: 3, S0212: 2, H0063: 1 2, H0488: 1, L0789: 1 and S0428: 1.		
HLTCZ37	574705	2817	1 - 183	12569		H0090: 2		
HLTDC32	574699	2818	1 - 288	12570	Gly-2 to Pro-10.	H0271: 1 and H0090: 1.		
HLTDC80	574698	2819	194 - 367	12571	Ser-12 to Ala-23.	H0271: 1 and H0090: 1.		
HLTDD44	522698	2820	59 - 115	12572		H0090: 2		
HLTDD62	571328	2821	14 - 259	12573		H0090: 2		
HLTDE78	856603	2822	2 - 157	12574		H0090: 2		
HLTDEK54	574714	2823	117 - 290	12575	Ser-30 to Asn-36.	H0090: 2		
HLTDEK64	772378	2824	3 - 149	12576		H0543: 2, H0556: 1, H0341: 5q35 1, H0090: 1, H0591: 1, L0766: 1 and L0758: 1.	123101, 164040, 208100, 246530	
HLTDL71	508932	2825	3 - 200	12577	Glu-14 to Phe-22, Val-58 to Gln-64.	H0090: 2		
HLTDY14	973100	2826	34 - 255	12578		H0179: 1 and H0090: 1.		
HLTDY57	934619	2827	160 - 513	12579		H0611: 1, H0069: 1, H0090: 1 and H0264: 1.		
HLTEA13	971722	2828	559 - 681	12580		H0179: 2, H0090: 1 and H0445: 1.		
HLTEE40	711453	2829	160 - 2	12581		H0083: 1 and H0090: 1.		
HLTEF24	871203	2830	3 - 149	12582	Gln-26 to Gln-33.	H0090: 2		

HLTEL47	720474	2831	469 - 597	12583		H0580: 1 and H0090: 1.	
HLTEL53	723405	2832	1 - 231	12584		S0114: 1, H0614: 1 and H0090: 1.	
HLTEK94	793033	2833	83 - 361	12585		H0090: 2	
HLTEL11	967529	2834	38 - 127	12586	Asn-14 to Ile-22, Ser-24 to Phe-30.	H0341: 2 and H0090: 1.	
HLTEL25	508607	2835	2 - 124	12587		H0090: 2	
HLTEL59	851867	2836	378 - 575	12588	Arg-16 to Asn-22, Arg-29 to Glu-35.	H0090: 2 and L0748: 1.	
HLTEO88	955228	2837	133 - 270	12589		H0090: 2	
HLTESS0	958906	2838	67 - 255	12590	Arg-8 to Asn-14.	L0766: 4, L0779: 2, H0486: 1, H0090: 1, L0520: 1, L0761: 1, L0666: 1, L0438: 1 and L0745: 1.	
HLTESS9	739412	2839	112 - 273	12591		H0250: 1 and H0090: 1.	
HLTEX10	968060	2840	116 - 247	12592	Gly-11 to Ser-19.	H0090: 2	
HLTEX38	573353	2841	84 - 206	12593	Arg-28 to Gln-36.	H0090: 2	
HLTEZ24	572779	2842	237 - 470	12594		H0090: 2 and H0063: 1.	
HLTEZ33	574634	2843	95 - 244	12595	Cys-13 to Arg-20.	H0090: 2	
HLTFA05	932221	2844	185 - 334	12596		H0581: 1 and H0090: 1.	
HLTFA34	703403	2845	2 - 109	12597		H0580: 1, H0090: 1 and L0803: 1.	
HLTGF04	927449	2846	533 - 784	12598	Pro-78 to Lys-84.	L0439: 3, S0426: 2, L0766: 2, H0657: 1, H0591: 1, S0002: 1, L0772: 1, L0775: 1, L0438: 1, H0521: 1, L0748: 1 and L0758: 1.	
HLTGF55	669071	2847	180 - 19	12599	Glu-1 to Asn-6, Phe-27 to Lys-33, Pro-43 to Gly-51.	H0591: 2	
HLTGG25	677696	2848	65 - 310	12600	Asn-1 to Asn-6, Pro-9 to Ser-16.	H0591: 2	
HLTGG61	741529	2849	25 - 186	12601	Glu-21 to Trp-27.	H0591: 17	
HLTGM60	973438	2850	253 - 468	12602	Asn-10 to Cys-15, Lys-35 to Gly-44.	H0591: 2	
HLTGP51	725140	2851	32 - 163	12603	Ser-17 to Ala-22.	H0591: 2	

HLTG63	744700	2852	238 - 80	12604	Ile-38 to Ile-43.	H0318: 1 and H0591: 1.	
HLTGS44	716323	2853	132 - 251	12605		H0591: 1, L0748: 1 and H0423: 1.	
HLTGV54	729247	2854	2 - 136	12606	Gln-14 to His-19.	H0591: 2	
HLTGV64	665647	2855	228 - 413	12607	Gln-28 to Asn-34.	H0591: 4 and L0738: 1.	
HLTGV67	747584	2856	293 - 430	12608		H0591: 3	
HLTGX26	681233	2857	165 - 311	12609		H0591: 2	
HLTGY75	767060	2858	113 - 343	12610		H0090: 1 and H0591: 1.	
HLTHC34	702078	2859	1 - 159	12611	Leu-28 to Asn-34.	H0591: 3	
HLTHH89	974112	2860	43 - 249	12612		H0591: 3	
HLTHI11	966435	2861	412 - 597	12613		H0591: 3, H0581: 1 and H0444: 1.	
HLTHI35	707245	2862	379 - 543	12614		L0766: 2, H0581: 1, H0591: 1, H0576: 1 and L0748: 1.	
HLTHI68	719927	2863	160 - 294	12615		S0218: 1 and H0591: 1.	
HLTHO15	969356	2864	2 - 205	12616		H0591: 2	
HLTHO31	697550	2865	2 - 196	12617		H0591: 2	
HLTHO46	923482	2866	157 - 273	12618		H0591: 2	
HLTHS75	965126	2867	103 - 381	12619	Thr-79 to Leu-85.	H0591: 1 and H0423: 1.	
HLTHV83	780482	2868	670 - 837	12620		H0591: 1 and H0444: 1.	
HLTHI72	968986	2869	54 - 296	12621		H0591: 2	
HLTAA21	671074	2870	428 - 715	12622	Pro-2 to Lys-19, Glu-24 to Pro-42, Pro-71 to Gln-78, Gly-89 to Lys-96.	L0731: 2, H0402: 1 and H0445: 1.	
HLTAA41	909874	2871	3 - 386	12623	Asp-1 to Ser-7, Pro-10 to Cys-18, Glu-36 to Ala-54, Tyr-83 to Pro-91, Pro-108 to Gly-115.	AR089: 1, AR061: 1 H0445: 4, L0761: 2, H0421: 1, S0002: 1 and L0788: 1.	
HLTAA44	964841	2872	62 - 298	12624	Asp-19 to Arg-30, Lys-73 to Ala-78.	H0445: 5 and L0748: 1.	
HLTAB02	920407	2873	171 - 332	12625	Asn-1 to Pro-6.	S0114: 1 and H0445: 1.	
HLTAB38	861161	2874	3 - 215	12626	Phe-45 to Tyr-50.	S0212: 3 and H0445: 1.	
HLTAC38	668989	2875	1 - 273	12627		H0445: 2	

HLVAD10	964845	2876	350 - 550	12628	Lys-1 to Lys-8, Thr-29 to Ser-36.	H0445: 2	
HLVAE50	576449	2877	313 - 471	12629	Gly-30 to Pro-53.	H0402: 1 and H0445: 1.	
HLVAF20	668872	2878	454 - 663	12630		L0766: 8, L0748: 4, L0756: 2, L0777: 2, L0604: 2, L0157: 1, H0591: 1, L0750: 1, L0779: 1, H0445: 1 and H0543: 1.	
HLVAF28	975007	2879	269 - 424	12631	Lys-11 to Tyr-17.	H0445: 2	
HLVAG42	691747	2880	43 - 152	12632		H0445: 2 and S0428: 1.	
HLVAH26	855981	2881	3 - 419	12633		H0444: 1 and H0445: 1.	
HLVAK12	970807	2882	143 - 295	12634		H0445: 2	
HLVAL83	780075	2883	303 - 482	12635	Lys-1 to Ala-7, Ser-25 to Gln-39, Thr-44 to Gly-53.	S0052: 1 and H0445: 1.	
HLVAA031	698104	2884	125 - 271	12636	Pro-10 to Gln-15, Ser-30 to Arg-37, Gly-43 to Cys-49.	H0445: 2, L0002: 1 and L0594: 1.	
HLVAA067	924042	2885	96 - 314	12637	Asn-22 to Leu-35, Phe-43 to Ala-59.	H0305: 2, L0731: 1 and H0445: 1.	
HLVAP10	964748	2886	288 - 431	12638	Gly-28 to Lys-47.	S0052: 1 and H0445: 1.	
HLVAP26	681892	2887	195 - 362	12639		H0580: 1 and H0445: 1.	
HLVAA080	868396	2888	319 - 564	12640	Pro-39 to Lys-58.	H0581: 1 and H0445: 1.	
HLVAT56	935552	2889	1 - 213	12641		H0421: 1, S0052: 1 and H0445: 1.	
HLVAAU29	576596	2890	3 - 251	12642		H0402: 1, L0745: 1 and H0445: 1.	
HLVAV80	689969	2891	3 - 221	12643	Asp-1 to Ser-16.	H0445: 3	
HLVAAW35	780987	2892	261 - 386	12644		H0580: 1 and H0445: 1.	
HLVAX61	707248	2893	184 - 333	12645		H0445: 2	
HLVAX85	575868	2894	2 - 391	12646		H0402: 1, L0761: 1, H0436: 1 and H0445: 1.	
HLVAY62	825513	2895	93 - 350	12647		H0445: 2	

HLAYAY65	573863	2896	1 - 237	12648		H0445: 2	
HLYBA01	916635	2897	341 - 478	12649		H0445: 2	
HLYBA42	871648	2898	497 - 664	12650	Ser-38 to Arg-56.	H0445: 2 and L0605: 1.	
HLYBA72	717644	2899	178 - 351	12651		H0445: 2	
HLYBA85	573878	2900	2 - 280	12652	Arg-1 to Thr-9.	H0445: 2	
HLYBA96	573834	2901	1 - 123	12653	Lys-64 to Lys-80.		
HLYBB50	708624	2902	158 - 313	12654	Ser-21 to Glu-29.	H0445: 2	
HLYBB65	866883	2903	331 - 477	12655	Met-11 to Glu-19.	H0445: 2	
HLYBD46	573865	2904	2 - 133	12656	Gln-38 to Arg-43.	S0114: 1 and H0445: 1.	
HLYBF47	706517	2905	259 - 420	12657	Pro-1 to Cys-6.	H0445: 2	
HLYBF75	828077	2906	197 - 442	12658	Ser-37 to Thr-44.		
HLYBG18	573872	2907	335 - 478	12659	Arg-28 to Asn-33.	H0305: 1, L0766: 1, L0517: 1 and H0445: 1.	
HLYBH08	856445	2908	104 - 271	12660	Pro-27 to Phe-35.	L0758: 3, H0264: 2, L0779: 1 and H0445: 1.	
HLYBH56	733472	2909	161 - 406	12661	Lys-11 to Leu-20.	H0445: 2	
HLYBH91	576793	2910	329 - 478	12662	Ser-17 to Tyr-31.	L0749: 2, S0114: 1 and H0445: 1.	
HLYBI44	728035	2911	2 - 259	12663	Asn-70 to His-82.	H0445: 2	
HLYBI10	964752	2912	195 - 455	12664	Arg-4 to Ala-10.	H0090: 1 and H0445: 1.	
HLYBI42	713845	2913	121 - 252	12665	Val-12 to Gly-21.	H0423: 2 and H0445: 1.	
HLYBL92	856419	2914	389 - 592	12666	Gly-10 to Arg-25.	H0445: 2	
HLYBM35	625408	2915	81 - 302	12667		H0445: 3 and L0766: 1.	
HLYBM75	757084	2916	138 - 278	12668		H0445: 3, H0255: 2, L0749: 2, H0556: 1, H0402: 1, H0108: 1, H0090: 1, H0436: 1, H0444: 1 and S0196: 1.	
HLYBN94	670500	2917	207 - 353	12669	Thr-28 to Lys-36.	H0445: 2 and L0748: 1.	
HLYBO53	721377	2918	140 - 262	12670	Arg-43 to Glu-48.		
					Gln-6 to Arg-12.	H0445: 2	
					Arg-17 to Arg-25.		
					Asn-30 to Asp-44.		
					Lys-12 to Gly-27.	H0445: 2	



HL YBR03	924515	2919	203 - 397	12671	Trp-31 to Ile-38, Gln-1 to His-13.	H0402: 1 and H0445: 1. H0445: 3
HL YBR41	712389	2920	334 - 510	12672	Ala-6 to Ser-11, Gly-19 to His-27.	L0805: 2, H0445: 2, L0766: 1, L0803: 1, L0438: 1 and H0436: 1.
HL YBR83	750318	2921	1 - 255	12673		S0212: 2, L0143: 1, H0202: 1 and H0445: 1. L0749: 2, H0457: 1, L0748: 1 and H0445: 1.
HL YBS12	970795	2922	455 - 646	12674		H0305: 2, L0809: 1, L0720: 1 and H0445: 1. H0487: 1, H0521: 1 and H0445: 1.
HL YBT19	668744	2923	2 - 250	12675		H0445: 2 L0748: 2, H0445: 1 and H0543: 1.
HL YBT64	527687	2924	67 - 225	12676		S0053: 1 and H0445: 1. H0445: 2, L0803: 1, L0789: 1 and L0753: 1.
HL YBT69	678175	2925	132 - 383	12677	Tyr-22 to Ser-31.	H0264: 1 and H0445: 1.
HL YBT84	575828	2926	1 - 57	12678	Ser-8 to Asn-19.	
HL YBU28	914702	2927	38 - 196	12679		
HL YBU52	727213	2928	121 - 267	12680	Ser-8 to Glu-14.	
HL YBV42	713837	2929	3 - 209	12681		
HL YBW12	970796	2930	1 - 231	12682	Asp-22 to Val-28, Thr-56 to Ser-66, Pro-72 to Phe-77.	
HL YBW35	812692	2931	137 - 340	12683	Arg-5 to Phe-13, Ser-18 to Leu-23, Pro-32 to Ser-40.	S0052: 2, H0318: 1, S0428: 1 and H0445: 1.
HL YBX77	721086	2932	113 - 220	12684	Gly-11 to Glu-18.	S0114: 1 and H0445: 1. H0445: 2
HL YBX84	754842	2933	355 - 552	12685	Ser-1 to Leu-7.	H0457: 2, H0486: 1, H0264: 1, L0768: 1, L0666: 1, H0436: 1, L0754: 1, H0445: 1 and H0542: 1.
HL YBZ17	577479	2934	127 - 387	12686	Lys-60 to Gly-71.	
HL YBZ23	856430	2935	20 - 310	12687	Ser-6 to Ser-13.	H0445: 2 and H0422: 1. S0218: 1 and H0445: 1.
HL YBZ60	682675	2936	82 - 192	12688	Asp-10 to His-19.	H0445: 2, L0439: 1 and L0758: 1.
HL YBZ86	856436	2937	306 - 536	12689	Glu-37 to Lys-52.	

HLICA76	770107	2938	88 - 342	12690	Gln-1 to His-6, Glu-42 to Gln-51, Thr-58 to Glu-66.	S0116: 1 and H0445: 1.	
HLICA77	677758	2939	595 - 753	12691		H0445: 3	
HLICC39	710843	2940	458 - 577	12692		H0445: 2, H0521: 1 and L0748: 1.	
HLICC65	932727	2941	1 - 144	12693	Thr-21 to His-26.	H0445: 2	
HLICF12	908532	2942	68 - 268	12694	Ser-5 to Ser-12.	H0087: 1 and H0445: 1.	
HLICF46	718930	2943	82 - 234	12695	Arg-1 to Glu-6.	H0445: 1 and H0423: 1.	
HLICF70	741417	2944	1 - 111	12696	Thr-15 to Glu-22.	S0218: 1 and H0445: 1.	
HLICHI0	964354	2945	236 - 382	12697	Ser-3 to Gly-10, Ala-14 to Phe-19.	H0635: 1 and H0445: 1.	
HLICHI15	964840	2946	85 - 186	12698		H0445: 5 and L0748: 1.	
HLICM68	658540	2947	2 - 226	12699		H0445: 1 and H0422: 1.	
HLICM88	732392	2948	247 - 378	12700		H0264: 1 and H0445: 1.	
HLICN75	761510	2949	342 - 482	12701	Gly-6 to Thr-16.	S0114: 1 and H0445: 1.	
HLICQ31	697787	2950	17 - 163	12702	Ser-17 to Ser-22.	S0052: 1 and H0445: 1.	
HLICQ66	785990	2951	2 - 139	12703	Glu-5 to Asn-14, Pro-17 to Lys-22.	H0265: 1 and H0445: 1.	
HLICQ68	729293	2952	2 - 130	12704		H0445: 2	
HLICP66	706435	2953	167 - 367	12705	Arg-61 to Cys-67.	L0766: 2, L0603: 2, H0306: 1, L0307: 1 and H0445: 1.	
HLICQ53	728046	2954	63 - 314	12706	Asn-5 to Arg-11, Arg-25 to Trp-30, Thr-38 to Gly-48, Cys-66 to Lys-72, Glu-79 to Ser-84.	S0053: 1 and H0445: 1.	
HLICQ68	752887	2955	3 - 140	12707	Gly-12 to Ala-18.	S0218: 1 and H0445: 1.	
HLICR47	850147	2956	2 - 241	12708		H0306: 2, S0053: 2, H0445: 2, H0057: 1, H0179: 1, L0667: 1 and S0428: 1.	
HLICSI5	660006	2957	3 - 149	12709	Arg-44 to His-49.	H0445: 2	
HLICV49	718840	2958	137 - 307	12710		H0318: 1 and H0445: 1.	
HLICW04	618021	2959	3 - 344	12711	His-1 to Gly-6, Glu-18 to Glu-24.	H0444: 1 and H0445: 1.	
HLICW13	656827	2960	1 - 192	12712		H0445: 2	

HLVCW20	669541	2961	113 - 346	12713	Ser-24 to Gln-29.	S0002: 1 and H0445: 1.
HLVCW62	856443	2962	625 - 843	12714		H0445: 5, H0422: 2, H0271: 1 and L0387: 1.
HLVCY30	650859	2963	3 - 143	12715	Glu-6 to Asn-21.	H0402: 1, S0053: 1 and H0445: 1.
HLVCZ63	744886	2964	82 - 243	12716		H0591: 1 and H0445: 1.
HLVDB85	784253	2965	105 - 281	12717		H0445: 2
HLVDC02	919586	2966	564 - 743	12718		H0657: 1 and H0445: 1.
HLVDC77	772022	2967	120 - 266	12719	Arg-1 to Gln-8.	H0445: 2
HLVDD13	657010	2968	350 - 466	12720	Lys-25 to Leu-33.	H0445: 2
HLVDG06	935149	2969	1 - 183	12721	Tyr-14 to Gln-19, Asp-53 to Gly-61.	H0445: 2 and L0606: 1.
HLVDG21	856413	2970	371 - 550	12722		H0087: 1 and H0445: 1.
HLVDG27	682910	2971	173 - 391	12723	Pro-26 to Trp-32, Gln-36 to Cys-43, Pro-46 to Ile-54.	H0264: 1 and H0445: 1.
HLVDG38	597131	2972	174 - 299	12724	Ile-7 to Arg-24.	H0445: 2, S0216: 1 and L0748: 1.
HLVDG59	871587	2973	218 - 451	12725	Gln-33 to Lys-42.	H0486: 1 and H0445: 1.
HLVDH27	678266	2974	1 - 189	12726	Arg-1 to Phe-8.	L0517: 2, L0748: 2, H0318: 1, H0581: 1, L0761: 1, L0766: 1 and H0445: 1.
HLVDH32	699082	2975	102 - 245	12727	Lys-36 to Lys-42.	H0445: 2 and L0766: 1.
HLVDH52	726575	2976	373 - 540	12728	Leu-1 to Lys-8.	H0445: 2
HLVDJ08	959055	2977	282 - 527	12729	Lys-19 to Pro-30.	H0057: 1, L0663: 1 and H0445: 1.
HLVDK74	738346	2978	124 - 375	12730		H0265: 1 and H0445: 1.
HLVDL24	677041	2979	71 - 319	12731		L0748: 2, L0608: 2, H0635: 1, L0655: 1 and H0445: 1.
HLVDL60	909866	2980	3 - 392	12732	Ala-4 to Cys-11, Cys-15 to Arg-20, Pro-29 to Leu-35.	H0656: 1, H0457: 1 and H0445: 1.
HLVDL75	790244	2981	88 - 258	12733		H0445: 2
HLVDM51	973377	2982	201 - 431	12734	Asp-18 to Arg-38.	H0306: 2 and H0445: 1.
HLVDM62	743380	2983	105 - 287	12735		S0053: 1 and H0445: 1.

HLYDS06	733240	2984	234 - 70	12736	Lys-3 to Arg-8, Met-50 to Lys-68, Lys-90 to Asn-95, Arg-17 to Ser-23.	H0402: 1 and H0445: 1. H0445: 2 and L0747: 1.	
HLYD075	767170	2985	72 - 359	12737			
HLYDS11	966732	2986	111 - 302	12738		L0748: 1, L0749: 1, H0444: 1 and H0445: 1.	
HLYDS66	711565	2987	324 - 506	12739		S0114: 1, H0318: 1 and H0445: 1.	
HLYDS84	687991	2988	175 - 360	12740	Pro-9 to Val-34.	H0255: 1, H0402: 1 and H0445: 1.	
HLYDS91	775483	2989	221 - 379	12741	Asp-1 to Tyr-11.	H0543: 2 and H0445: 1.	
HLYDT03	920268	2990	88 - 222	12742		H0305: 2, H0402: 1, L0521: 1 and H0445: 1.	
HLYDT68	526245	2991	8 - 187	12743	Ile-3 to Thr-11.	H0222: 1, H0264: 1 and H0445: 1.	
HLYDU08	959074	2992	87 - 254	12744		H0445: 2	
HLYDV62	927872	2993	2 - 430	12745	Pro-19 to Cys-27, Glu-45 to Ala-63, Asp-96 to Pro-102, Pro-117 to Gly-124, Pro-132 to Ser-143, Lys-19 to Leu-27, Gly-50 to Pro-55, Phe-6 to Asn-12.	AR051: 24, AR054: 20, AR050: 20, AR061: 1, AR089: 1 H0445: 4, L0761: 2, H0421: 1, S0002: 1 and L0788: 1. S0134: 1 and H0445: 1.	
HLYDX93	669792	2994	72 - 278	12746			
HLYDZ44	716435	2995	137 - 370	12747		H0637: 1, L0439: 1 and H0445: 1.	
HLYEB56	710819	2996	1 - 138	12748		H0445: 2, L0659: 1 and L0599: 1.	
HLYED52	931992	2997	36 - 209	12749	Lys-26 to Asp-39.	H0445: 1 and H0543: 1.	
HLYED59	856383	2998	6 - 476	12750	Glu-11 to Val-16, Pro-35 to Lys-41.	L0757: 2, H0445: 2 and L0586: 1.	
HLYED65	747763	2999	111 - 227	12751	Tyr-12 to Thr-18, Ser-26 to Lys-37.	H0445: 2	
HLYED77	615312	3000	53 - 406	12752	Arg-18 to Gly-28, Pro-33 to Gly-41.	S0053: 1 and H0445: 1.	
HLYED85	784254	3001	199 - 501	12753	Ser-13 to Arg-21, Arg-64 to Thr-71.	H0521: 2, H0402: 1 and H0445: 1.	

HLYE34	703906	3002	410 - 541	12754	Lys-36 to Phe-44.	H0445: 2 and L0526: 1.	
HLYE81	488925	3003	38 - 307	12755	Lys-38 to Ser-47, Val-51 to Gly-71, Lys-80 to Lys-85.	S0114: 1, H0521: 1 and H0445: 1.	
HLYE47	666448	3004	182 - 445	12756	Asn-12 to Leu-19, Pro-37 to Phe-48.	S0114: 1 and H0445: 1.	
HLYE93	682176	3005	338 - 490	12757	Asn-3 to Asp-11, Lys-27 to Asn-32.	H0318: 1 and H0445: 1.	
HLYE40	710986	3006	37 - 156	12758		H0402: 1, S0426: 1, S0428: 1 and H0445: 1.	
HLYE73	760566	3007	2 - 214	12759		S0114: 1 and H0445: 1.	
HLYE38	709181	3008	115 - 282	12760	Leu-2 to Ser-11, Lys-38 to Ala-46.	H0444: 1 and H0445: 1.	
HLYE03	923834	3009	161 - 274	12761	Tyr-1 to Phe-6.	H0445: 2	
HLYE27	682763	3010	281 - 469	12762	Val-6 to Pro-12.	S0426: 1, H0445: 1 and L0362: 1.	
HLYE58	835409	3011	68 - 328	12763	Gln-10 to Trp-15.	H0552: 4, L0761: 3, H0383: 2, H0556: 1, H0650: 1, L0785: 1, S0002: 1, L0655: 1, H0445: 1 and H0543: 1.	
HLYE15	923620	3012	3 - 221	12764		H0580: 1 and H0445: 1.	
HLYE10	964109	3013	265 - 576	12765		H0318: 2 and H0445: 2.	
HLYE64	746339	3014	3 - 191	12766	Phe-30 to Ser-42.	H0445: 2	
HLYE16	924558	3015	174 - 311	12767	Ser-13 to Ser-22.	L0770: 1, L0766: 1, H0445: 1 and H0423: 1.	
HLYE47	953988	3016	260 - 436	12768	Gly-32 to His-49.	H0318: 1 and H0445: 1.	
HLYE08	865918	3017	16 - 276	12769	Ala-38 to Gln-48.	H0421: 1 and H0445: 1.	
HLYE23	675373	3018	261 - 476	12770		H0445: 2	
HLYE38	709184	3019	99 - 1	12771	Lys-28 to Gly-33.	H0445: 2	
HLYE64	936051	3020	255 - 422	12772	Gly-11 to Gly-32.	S0114: 1 and H0445: 1.	
HLYE27	682776	3021	73 - 180	12773	Gln-27 to Arg-36.	H0445: 2	
HLYE40	710851	3022	176 - 424	12774	Gly-55 to Gln-61.	H0370: 1, L0756: 1 and H0445: 1.	
HLYE96	916452	3023	95 - 244	12775	Arg-5 to Lys-13, Pro-28 to Met-34.	H0445: 2	
HLYE33	719251	3024	96 - 314	12776		T0002: 1, L0526: 1, L0758:	

HLVYF78	660000	3025	157 - 408	12777			I and H0445: 1.		
HLVGA32	698860	3026	97 - 249	12778			H0521: 1 and H0445: 1. S0116: 1, S0428: 1 and H0445: 1.		
HLVGA46	952292	3027	482 - 766	12779			H0445: 2, H0556: 1 and S0053: 1.		
HLVGC11	966480	3028	3 - 125	12780			S0114: 1 and H0445: 1.		
HLVGC18	665721	3029	10 - 366	12781			L0777: 2, H0445: 2 and L0731: 1.		
HLVGC63	744739	3030	3 - 200	12782			Thr-6 to Lys-33, Leu-47 to Lys-57, Phe-67 to Glu-83, Tyr-91 to Leu-97, Leu-105 to Ala-110.		
HLVGE28	686173	3031	184 - 318	12783			Thr-12 to Glu-26, Ser-57 to Glu-66, Lys-1 to Lys-11, Ser-22 to His-28.		
HLVGH53	871636	3032	233 - 406	12784			H0556: 1, H0069: 1, H0635: 1 and H0445: 1.		
HLVGI23	656698	3033	154 - 258	12785			H0444: 1 and H0445: 1.		
HLVGI24	676907	3034	39 - 122	12786			S0212: 1, L0766: 1, L0779: 1 and H0445: 1.		
HLVGI77	732362	3035	49 - 201	12787			L0766: 2, H0402: 1, L0779: 1 and H0445: 1.		
HLVGI82	698553	3036	127 - 294	12788			H0445: 2 and H0250: 1.		
HLVGI96	967628	3037	245 - 412	12789			H0445: 1 and H0543: 1.		
HLVGM41	712099	3038	197 - 310	12790			S0114: 1 and H0445: 1.		
HLVGM53	690748	3039	234 - 563	12791			H0264: 1 and H0445: 1.		
HLVGP15	920077	3040	11 - 229	12792			Lys-20 to Leu-32, Thr-7 to Trp-14, Arg-17 to Ser-33.		
HLVGP26	790301	3041	108 - 251	12793			H0445: 2 and L0362: 1. H0271: 1 and H0445: 1.		
HLVGP46	832311	3042	3 - 644	12794			L0748: 7, H0090: 2, H0264: 1, S0052: 1, L0749: 1 and H0445: 1.		
HLVGR39	744849	3043	132 - 299	12795			H0486: 1 and H0445: 1.		
HLVGV02	856376	3044	80 - 238	12796			H0444: 1 - and H0445: 1.		
HLVGV07	879387	3045	87 - 353	12797			H0457: 1 and H0445: 1. H0341: 1, H0402: 1 and		

HLXGV66	697627	3046	449 - 607	12798	Glu-39 to Val-45.	H0445: 1.	
HLXHB85	773990	3047	78 - 254	12799		H0445: 2 and L0748: 1.	
HLXHB09	590369	3048	3 - 179	12800		H0179: 1 and H0445: 1.	
HLXHG18	665713	3049	147 - 248	12801	Gly-29 to Glu-34.	L0748: 4, H0556: 1, L0378: 1 and H0445: 1.	
HLXHG45	711741	3050	321 - 599	12802		H0580: 1, H0445: 1 and L0362: 1.	
HLXHI75	767066	3051	249 - 410	12803	Phe-8 to Cys-15, Asn-34 to Trp-40.	H0116: 1, H0521: 1 and H0445: 1.	
HLXHK02	919199	3052	188 - 361	12804	Asp-1 to Ser-8, Pro-46 to Asn-54.	H0445: 2	
HLXHL74	765292	3053	418 - 546	12805	Asp-32 to Phe-42.	S0134: 1 and H0445: 1.	
HLXHM86	784724	3054	245 - 427	12806		H0487: 1 and H0445: 1.	
HLXHN47	720019	3055	1 - 309	12807		H0444: 1 and H0445: 1.	
HLXHN67	920551	3056	1 - 336	12808	Lys-74 to Gly-81, Arg-103 to Glu-112.	L0666: 1, L0438: 1, L0748: 1, L0439: 1, H0445: 1 and H0422: 1.	
HLXHQ49	659883	3057	58 - 228	12809		H0090: 1 and H0445: 1.	
HLXHQ79	751428	3058	304 - 561	12810		H0445: 2	
HMAAA35	773472	3059	3 - 230	12811	Ser-32 to Val-37, Gly-42 to Ala-49, Glu-51 to Glu-59, Gly-62 to His-69.	L0748: 2, H0444: 1 and H0445: 1.	
HMAAEB04	385644	3060	2 - 328	12812			
HMAAB83	745077	3061	166 - 288	12813	Asn-7 to Arg-15, Glu-26 to Asn-40.	S0144: 1 and S0142: 1.	
HMAAF10	968199	3062	1 - 363	12814	Pro-28 to Asp-33, Glu-42 to Val-55, Lys-96 to Ala-107.	S0144: 2	134790, 191044, 600040, 600138
HMAAB156	907640	3063	91 - 390	12815	His-1 to His-8, Glu-13 to Gly-20.	S0278: 1 and S0144: 1.	
HMAABN34	706264	3064	3 - 302	12816	Pro-14 to Leu-19.	AR089: 1, AR061: 0 S0116: 1, S0144: 1, S0002: 1 and H0521: 1. S0144: 3, L0659: 1 and	

HMAHQ71	729831	3065	189 - 497	12817	Ser-29 to Arg-39.	H0521: 1. AR089: 1, AR061: 0 S0144: 1 and H0521: 1. S0144: 2 S0144: 2 S0144: 1 and S0002: 1.
HMACS56	733395	3066	73 - 360	12818	Ser-17 to Trp-26.	
HMAADO2	920088	3067	3 - 218	12819		
HMAAD77	708074	3068	3 - 155	12820	Ala-1 to Gly-10, Arg-14 to Glu-20.	
HMAADM33	970491	3069	4 - 156	12821	Asn-22 to Ile-34.	
HMAADX31	697994	3070	29 - 262	12822	Asp-1 to Asp-11, Arg-13 to Lys-19.	
HMAADZ55	939916	3071	3 - 746	12823	His-22 to Thr-31, Leu-46 to Cys-62, Leu-93 to Ser-98, Ala-100 to Asp-109, Ser-235 to Ser-240.	AR054: 42, AR051: 21, AR061: 3, AR089: 1, AR050: 1 S0144: 3, H0583: 1, S0278: 1 and L0791: 1.
HMAAEI62	744337	3072	2 - 361	12824	Pro-12 to Arg-18, Ser-53 to Gly-60.	S0144: 2
HMAAFD57	734688	3073	3 - 233	12825	Ala-1 to Arg-15, Gly-61 to Ser-67.	H0416: 1 and S0144: 1.
HMAAFF77	856267	3074	32 - 244	12826	Ser-10 to Asn-19, Pro-27 to Pro-39.	S0144: 4, S0278: 3, S0142: 2 and H0060: 1.
HMAAFM35	925049	3075	246 - 440	12827	Leu-1 to Arg-13.	S0114: 1 and S0144: 1.
HMAAFM55	733286	3076	207 - 431	12828		S0278: 2 and S0144: 2.
HMAAPP30	692598	3077	1 - 156	12829	Arg-13 to Arg-20.	S0144: 4
HMAAFY42	778521	3078	1 - 312	12830		AR089: 1, AR061: 0 S0144: 1 and S0002: 1.
HMAAFZ61	741754	3079	14 - 103	12831		S0144: 2
HMAAGK69	723186	3080	31 - 417	12832	Arg-1 to Ser-6, Lys-23 to Glu-29, Ala-36 to Glu-42, Ser-77 to Glu-89.	AR089: 2, AR061: 1 S0278: 1 and S0052: 1.
HMAAHP62	736039	3081	2 - 334	12833	Arg-1 to Gly-8, Thr-17 to Arg-25.	
HMAAHR04	694042	3082	2 - 112	12834	Gly-6 to Glu-18, Pro-20 to Gly-30.	S0278: 1 and S0144: 1. H0161: 1 and S0278: 1.
HMAAHS30	824422	3083	1 - 159	12835		S0278: 1 and H0521: 1.



HMAHX69	735355	3084	1 - 357	12836	Gly-47 to Lys-52.	H0556: 1 and S0278: 1.	
HMAIC22	947905	3085	1 - 435	12837	Pro-1 to Arg-16, His-45 to Pro-51.	AR061: 5, AR089: 2 S0278: 2	
HMAIP90	681320	3086	1 - 267	12838	Gly-52 to Pro-60,	S0278: 3	
HMAIU62	856278	3087	1 - 381	12839	Phe-70 to Pro-75, Gly-120 to Thr-127.		
HMAJY01	916259	3088	47 - 199	12840	Leu-3 to Arg-16, His-32 to Tyr-39, Pro-46 to Gly-54, Tyr-77 to Thr-82.	S0278: 1 and S0142: 1. AR054: 2, AR050: 1, AR051: 0 S0278: 1 and S0144: 1.	
HMAKA11	801917	3089	869 - 1114	12841	Ser-8 to Ser-16, Ala-89 to Tyr-95.		
	966282	9569	211 - 606	19321			
HMAKF82	856311	3090	285 - 542	12842	Gln-54 to Val-63, Asn-88 to Pro-93.	S0278: 1 and S0002: 1. AR061: 9, AR089: 3 L0770: 4, H0638: 1, S0278: 1, H0641: 1, L0763: 1, L0809: 1, L0779: 1 and L0758: 1.	
HMALE66	956195	3091	39 - 377	12843			
HMAIA69	975074	3092	129 - 377	12844	Phe-1 to Met-6.	S0278: 3	
HMAIE11	955999	3093	2672 - 2196	12845		S0278: 1 and S0144: 1.	
HMCAT27	959557	3094	43 - 405	12846		H0477: 1, S0142: 1 and L0800: 1.	
HMCAL60	586435	3095	2 - 301	12847	Arg-1 to Thr-30, Ser-44 to Gly-57, Lys-63 to Arg-68, Gln-72 to Trp-89, His-91 to Asp-97.	S0142: 2	107470, 107470, 107470, 120110, 121014, 142470, 156225, 164200, 164200, 207800, 601316, 601410, 601757, 602067
HMCAO01	916843	3096	129 - 365	12848			
HMCAU25	856241	3097	1 - 267	12849	Ser-22 to Trp-35, Thr-43 to Trp-50.	S0142: 1 and S0344: 1.	
HMCWA49	974119	3098	216 - 569	12850	Gly-36 to Met-43, Asp-50 to Ser-58.	S0142: 1, S0344: 1 and H0522: 1.	

HMCZ67	751804	3099	464 - 586	12851	Glu-8 to Asp-14, Lys-36 to Pro-41.	S0142: 2 and L0748: 1.	16	
HMCB105	932146	3100	157 - 324	12852		S0142: 2		
HMCBA45	722027	3101	1 - 291	12853	Phe-41 to Ser-48.	S0142: 2		
HMCBB30	692830	3102	53 - 343	12854	Glu-72 to Gly-87.	S0142: 3		
HMCBB62	747136	3103	2 - 241	12855	Ala-1 to Pro-17.	S0142: 2		
HMCBB78	773660	3104	1 - 303	12856	Leu-26 to Ala-33.			
HMCDB42	713051	3105	218 - 409	12857	Pro-9 to Ala-21, Pro-39 to Gly-47.	S0142: 2		
					Lys-14 to Ser-23, Glu-42 to Asp-50.	L0766: 2, L0776: 2, L0740: 2, S0134: 1, H0635: 1, L0370: 1, S0142: 1, L0792: 1, H0521: 1, H0522: 1, L0779: 1 and L0366: 1.		
HMCDB32	692249	3106	185 - 337	12858		H0306: 1 and S0142: 1.		
HMCDB22	895981	3107	1 - 627	12859	Gly-1 to Lys-9, Lys-15 to Gly-20, Arg-26 to Ala-36, Tyr-108 to Leu-113.	AR089: 2, AR061: 1 S0142: 1, L0747: 1 and H0423: 1.		
HMCDBT92	974588	3108	1 - 192	12860	Gly-1 to Ile-17, Cys-32 to Gly-41, Asn-57 to Leu-62.	S0142: 3 and S0344: 1.		
HMCFA71	760034	3109	1 - 111	12861		S0344: 2	10q24-q25	157640, 167409, 174900, 180250, 186770, 236730, 271245, 278000, 278000, 600020, 600095, 600512, 601107, 601130, 602082, 602669, 602669
HMCBFB22	963794	3110	2 - 217	12862		S0344: 2		
HMCBFR51	725425	3111	2 - 331	12863	Ser-20 to Ala-25.	S0344: 1 and S0053: 1.		
HMCBFW22	674074	3112	327 - 521	12864	Ser-14 to Cys-32, Pro-50 to Glu-65.	H0402: 1, H0580: 1, S0344: 1, L0794: 1 and S0052: 1.		
HMCBGG31	697533	3113	206 - 349	12865	Glu-24 to Asp-40.	L0749: 2, S0140: 1, H0318:		

HMCGI36	708030	3114	55 - 162	12866		1, H0271: 1, S0344: 1, L0761: 1, L0754: 1, L0780: 1, L0755: 1 and L0758: 1, L0526: 2, H0580: 1 and S0344: 1,
HMCN29	690288	3115	1 - 126	12867		S0344: 2
HMCOW54	846134	3116	196 - 351	12868		H0421: 2, S0344: 1 and L0439: 1,
HMCOW77	753133	3117	1 - 402	12869	Gly-50 to Asn-56, Pro-67 to Leu-72,	AR061: 384, AR089: 164 H0063: 1 and S0344: 1, S0344: 1 and S0002: 1, S0344: 1 and H0521: 1, H0402: 1 and S0344: 1, S0344: 3
HMCIA04	927287	3118	231 - 464	12870	Gly-14 to Arg-24,	S0344: 2
HMCHE16	856332	3119	57 - 416	12871	Pro-28 to Cys-34,	
HMCCHG76	769734	3120	1 - 216	12872	Ser-51 to Trp-57,	
HMCCK22	974585	3121	364 - 570	12873		
HMCIA10	963791	3122	159 - 341	12874	Glu-37 to Lys-57,	
HMCIA94	853999	3123	1 - 210	12875	Arg-30 to Glu-35, Lys-52 to Ser-61,	S0344: 2 H0486: 2 and S0344: 1,
HMCCK90	788596	3124	153 - 401	12876	Lys-24 to Glu-30, Gly-40 to Asn-46,	S0344: 1 and H0521: 1,
HMCIB32	698541	3125	31 - 261	12877		S0344: 2
HMCCK30	671932	3126	189 - 368	12878		H0264: 1 and S0344: 1, AR089: 53, AR061: 4 H0444: 2
HMMAB49	462502	3127	1 - 204	12879		
HMMAC10	964846	3128	100 - 237	12880		H0063: 1 and H0444: 1, H0444: 2 and L0526: 1, H0306: 1 and H0444: 1, H0444: 1 and H0445: 1, H0445: 2, L0607: 1 and H0444: 1,
HMMAC19	953580	3129	59 - 166	12881	Pro-18 to His-35,	
HMMAC79	577951	3130	301 - 456	12882	Lys-7 to Leu-12,	
HMMAD06	935734	3131	155 - 322	12883		
HMMAD35	964749	3132	220 - 393	12884		
HMMAD40	666181	3133	88 - 225	12885	Glu-1 to Asn-13,	
HMMAD58	891329	3134	27 - 155	12886		AR054: 1, AR050: 1, AR051: 0 H0402: 2 and H0444: 1,
	971602	9570	1157 - 1558	19322	Lys-1 to Lys-13, Glu-39 to Glu-44, Arg-64 to Arg-79,	

HMMAE12	970892	3135	1 - 198	12887		H0444: 1 and H0543: 1.	
HMMAE43	715381	3136	48 - 218	12888		S0114: 1 and H0444: 1.	
HMMAF44	853916	3137	122 - 364	12889	Lys-24 to Arg-31, Lys-46 to Glu-54.	H0444: 2	
HMMAF70	577918	3138	252 - 386	12890	Ser-20 to Met-25.	L0754: 2, H0444: 2 and L0750: 1.	
HMMAF73	506275	3139	46 - 294	12891	Gly-57 to Trp-64.	H0444: 2	
HMMAH25	677861	3140	191 - 310	12892		H0444: 1 and H0445: 1.	
HMMAH45	674953	3141	83 - 3	12893	Phe-4 to Ala-10, Asn-12 to Lys-18.	H0271: 1, S0052: 1 and H0444: 1.	
HMMAI03	860715	3142	1 - 171	12894		S0052: 1 and H0444: 1.	
HMMAI56	734563	3143	3 - 215	12895		H0444: 2	
HMMAI61	718876	3144	297 - 479	12896	Arg-14 to Glu-26.	H0444: 2 and H0576: 1.	
HMMAJ18	666195	3145	195 - 314	12897		H0444: 1 and H0445: 1.	
HMMAL28	677446	3146	2 - 184	12898		H0090: 1 and H0444: 1.	
HMMAL63	744861	3147	286 - 435	12899	Cys-1 to Thr-10, Tyr-24 to Gly-35.	H0069: 1 and H0444: 1.	
HMMAP18	666199	3148	256 - 396	12900	Lys-25 to Val-32.	H0444: 2	
HMMAP45	717599	3149	169 - 423	12901	Tyr-24 to Gly-30, Pro-46 to Asn-54.	S0033: 1 and H0444: 1.	
HMMAP66	668827	3150	190 - 354	12902	His-7 to Asp-14.	S0114: 1 and H0444: 1.	
HMMAP72	671947	3151	256 - 372	12903	Lys-13 to Ala-20, Thr-30 to Gly-38.	H0305: 2, S0114: 1, H0589: 1, H0635: 1 and H0444: 1.	
HMMAQ04	739304	3152	2 - 427	12904	His-12 to Gly-25, Pro-51 to Arg-67, Pro-95 to Arg-110.	H0402: 1 and H0444: 1.	
HMMAQ15	659966	3153	3 - 197	12905	Thr-16 to Thr-24, Arg-30 to Pro-43.	L0658: 1, S0216: 1, L0438: 1, L0748: 1, L0439: 1 and H0444: 1.	
HMMAQ35	707273	3154	2 - 208	12906	Thr-29 to Asp-34.	H0402: 1 and H0444: 1.	
HMMAR75	919558	3155	121 - 288	12907		L0520: 1, L0532: 1, H0444: 1 and H0445: 1.	
HMMAS88	728019	3156	306 - 488	12908		H0444: 2	
HMMAS91	496192	3157	202 - 468	12909	Pro-47 to Ser-59, Arg-75 to Lys-81.	H0402: 1 and H0444: 1.	

HMMAT17	662705	3158	116 - 259	12910	Ser-4 to Ile-9, Asn-8 to Gly-14.	H0444: 2	
HMMAT26	681416	3159	134 - 316	12911		H0271: 1, L0527: 1 and H0444: 1.	
HMMAT78	733239	3160	207 - 299	12912		H0318: 1 and H0444: 1.	
HMMATU10	964281	3161	155 - 334	12913	Asn-4 to Lys-12, Pro-48 to Ala-56.	H0444: 1 and H0423: 1.	
HMMAV35	707274	3162	1 - 219	12914	Gly-15 to Ala-21, Arg-27 to Val-35.	S0114: 1 and H0444: 1.	
HMMAV74	742642	3163	85 - 291	12915		H0444: 2	
HMMAV85	784221	3164	63 - 206	12916	Arg-8 to Thr-15, Ser-26 to Lys-37.	S0114: 1 and H0444: 1.	
HMMAV91	854043	3165	2 - 193	12917	His-4 to Arg-17, Pro-49 to Gln-58.	S0052: 2, H0402: 1 and H0444: 1.	
HMMBD12	866824	3166	121 - 369	12918	Gln-26 to Gly-33.	S0114: 1 and H0444: 1.	
HMMBD29	935775	3167	1 - 225	12919		H0305: 4 and H0444: 1.	
HMMBD33	702222	3168	253 - 417	12920		H0444: 2	
HMMBD79	490057	3169	4 - 231	12921		H0576: 1 and H0444: 1.	
HMMBD81	728362	3170	178 - 270	12922	Gln-22 to Trp-31.	S0114: 1 and H0444: 1.	
HMMBH76	959722	3171	82 - 213	12923	Gly-39 to Ser-44.	H0444: 2, H0402: 1 and H0421: 1.	
HMMBI50	868199	3172	129 - 401	12924		H0444: 1 and H0543: 1.	
HMMBI26	681407	3173	94 - 267	12925	Thr-1 to Ala-10.	H0255: 1, L0748: 1 and H0444: 1.	
HMMBI31	697735	3174	19 - 156	12926	Pro-10 to Phe-15.	H0444: 2	
HMMBM13	577508	3175	75 - 338	12927		S0114: 1, H0402: 1, L0783: 1, L0758: 1 and H0444: 1.	
HMMBM24	676996	3176	116 - 316	12928		L0748: 2, S0002: 1 and H0444: 1.	
HMMBM31	855965	3177	214 - 384	12929	Lys-1 to Lys-9, Gln-36 to Trp-42.	H0486: 1 and H0444: 1.	
HMMBM54	729350	3178	3 - 173	12930	Leu-14 to Leu-20, Ser-42 to Asn-51.	H0444: 2	
HMMBM77	771979	3179	142 - 360	12931	Pro-8 to His-18, Arg-35 to His-42, Pro-49 to His-56, Pro-64 to Ser-69.	H0444: 2	

HMMBO43	657400	3180	104 - 307	12932	Pro-51 to Arg-58.	S0052: 1 and H0444: 1.
HMMBO46	856831	3181	211 - 489	12933	Gly-3 to Gln-8, Pro-67 to Lys-72.	H0444: 2, H0255: 1 and L0783: 1.
HMMBP10	964268	3182	109 - 351	12934	Lys-13 to Asp-18,	H0444: 2 and L0471: 1.
HMMBP22	674272	3183	136 - 306	12935	Ser-32 to Ser-37.	H0444: 2
HMMBP27	682856	3184	102 - 323	12936		H0556: 1, L0754: 1 and H0444: 1.
HMMBQ48	721466	3185	3 - 134	12937		H0116: 1 and H0444: 1.
HMMBR33	702221	3186	259 - 549	12938	Lys-1 to Leu-6, Phe-19 to Gly-25, Leu-33 to Ser-42, Ser-54 to Phe-80.	H0341: 1 and H0444: 1.
HMMBR77	855942	3187	29 - 178	12939		H0444: 2, H0637: 1 and L0662: 1.
HMMBR91	757047	3188	7 - 129	12940		H0444: 2
HMMBR92	791274	3189	26 - 178	12941	Pro-22 to His-27.	H0444: 2
HMMBS41	711733	3190	8 - 211	12942	Val-17 to Asn-24.	H0402: 1 and H0444: 1.
HMMBS61	741656	3191	3 - 227	12943	Gly-6 to Asn-33.	S0140: 1 and H0444: 1.
HMMBT27	682325	3192	174 - 308	12944	Ala-1 to Ser-6.	H0318: 1 and H0444: 1.
HMMBU27	716049	3193	228 - 368	12945		S0114: 1 and H0444: 1.
HMMBU75	490083	3194	49 - 363	12946	Ala-21 to Glu-28.	S0053: 1 and H0444: 1.
HMMBU78	773426	3195	493 - 708	12947		L0748: 3, H0444: 1 and H0445: 1.
HMMBV17	662684	3196	2 - 193	12948	Pro-22 to Asn-37, Ser-51 to Asn-56.	H0421: 1 and H0444: 1.
HMMBV53	727572	3197	13 - 138	12949		H0444: 1 and H0445: 1.
HMMBV71	490078	3198	198 - 383	12950	Glu-17 to Gly-31.	S0116: 1 and H0444: 1.
HMMBX63	729268	3199	53 - 214	12951	Leu-8 to Ala-16.	H0583: 1 and H0444: 1.
HMMBZ91	755799	3200	265 - 396	12952		H0264: 1 and H0444: 1.
HMMCA43	715085	3201	56 - 193	12953		S0052: 1, S0428: 1 and H0444: 1.
HMMCB67	735293	3202	44 - 250	12954	Lys-4 to Trp-13, Cys-23 to Pro-31.	H0444: 2, H0402: 1, H0264: 1 and L0748: 1.
HMMCC09	625368	3203	110 - 364	12955	Trp-7 to Glu-14.	H0444: 2

					Arg-25 to Gly-31, Ala-33 to Arg-42, Phe-58 to Gly-68.				
HMMCD21	670651	3204	59 - 196	12956					H0265: 1 and H0444: 1.
HMMCE16	577388	3205	13 - 174	12957	Pro-6 to Gly-11.				H0444: 2 and H0271: 1.
HMMCE26	935148	3206	306 - 497	12958					L0748: 1, H0444: 1, H0445: 1 and H0422: 1.
HMMCF94	913661	3207	235 - 396	12959	Leu-1 to Arg-17.				S0114: 1 and H0444: 1.
HMMCH04	944069	3208	3 - 338	12960	Pro-30 to Pro-35, Ser-44 to Thr-50, Arg-81 to Ala-90.				AR089: 54, AR061: 5 L0717: 1, H0581: 1, L0752: 1 and H0444: 1.
HMMCI03	923771	3209	181 - 363	12961					H0488: 1, H0521: 1 and H0444: 1.
HMMCI43	864098	3210	268 - 444	12962	Asn-7 to Gln-13.				H0318: 1, H0576: 1 and H0444: 1.
HMMCI67	587819	3211	215 - 376	12963					H0486: 1, H0521: 1 and H0444: 1.
HMMCI83	855918	3212	205 - 318	12964	Ser-8 to Phe-13.				H0402: 1 and H0444: 1.
HMMCI93	708060	3213	247 - 528	12965	His-15 to Gln-22, Ser-37 to Gln-43.				H0444: 2
HMMCK81	666792	3214	73 - 360	12966					H0444: 2
HMMCN36	919484	3215	254 - 475	12967	Ser-23 to Cys-40.				H0444: 2
HMOAC95	677110	3216	56 - 220	12968	Pro-49 to Ala-54.				S0278: 1 and H0191: 1.
HMPAA21	670114	3217	544 - 407	12969					H0060: 2, S0116: 1 and L0748: 1.
HMPAB62	754152	3218	3 - 122	12970	Thr-23 to Trp-40.				H0060: 1 and H0444: 1.
HMPAP52	709621	3219	176 - 277	12971	Phe-2 to Ser-8.				H0060: 2
HMPBA34	705509	3220	275 - 442	12972					H0061: 1 and H0271: 1.
HMPBB11	855911	3221	125 - 271	12973	Gln-19 to Tyr-25.				H0061: 2
HMPTA49	723299	3222	211 - 303	12974	Ser-2 to Gly-7, Lys-22 to Gln-27.				H0109: 1 and S0002: 1.
HMPTE27	684607	3223	240 - 359	12975	Gln-18 to Asn-27, Asn-35 to Leu-40.				H0109: 2
HMPTC84	954383	3224	2 - 154	12976					H0109: 2
HMPTI69	932799	3225	211 - 369	12977					H0109: 2

HMQA4B40	712805	3226	5 - 211	12978		L0771: 2, H0250: 1, H0521: 1 and L0747: 1.
HMQA4G45	723493	3227	153 - 359	12979		H0250: 2
HMQA4L95	684917	3228	90 - 317	12980	His-23 to Arg-30.	H0250: 9
HMQA034	706341	3229	12 - 194	12981		H0250: 2
HMQA31	825480	3230	43 - 185	12982		H0250: 2
HMQA525	923515	3231	2 - 340	12983		H0063: 2 and H0250: 1.
HMQA020	384780	3232	135 - 263	12984		H0250: 2 and L0748: 1.
HMQA4X65	856318	3233	2 - 250	12985	Val-33 to Phe-40, Arg-43 to Thr-50.	H0250: 7
HMQB0D30	714031	3234	3 - 335	12986		H0250: 3
HMQB0H12	825460	3235	49 - 186	12987		H0250: 2 and H0581: 1.
HMQB0L13	723212	3236	3 - 344	12988	Gln-1 to Tyr-10, Asn-59 to Arg-64, Lys-71 to Gln-79.	H0250: 2
HMQB0L17	664904	3237	2 - 199	12989	Gln-32 to Cys-50, Gln-58 to Leu-63.	H0250: 3
HMQB0L54	708075	3238	191 - 304	12990	Ser-1 to Trp-6.	H0250: 2 and H0556: 1.
HMQB0M27	855902	3239	58 - 270	12991	Thr-2 to Arg-33.	H0250: 3
HMQB0M59	708073	3240	124 - 345	12992	Asn-6 to Gly-15.	H0250: 2
HMQB0N41	683723	3241	155 - 262	12993		H0250: 2
HMQB0O17	720569	3242	156 - 305	12994	Gln-1 to Ala-14, Lys-21 to Ile-28.	H0250: 2
HMQB0P18	707279	3243	136 - 369	12995	Gln-1 to His-19, Lys-31 to Pro-39.	H0250: 4
HMQB0P26	684887	3244	48 - 182	12996		H0250: 4, L0527: 1 and L0747: 1.
HMQB0P54	855900	3245	108 - 335	12997		H0250: 3
HMQB0T65	708065	3246	173 - 298	12998	Gln-12 to Leu-20.	H0250: 3 and L0665: 1.
HMQB0U96	765162	3247	2 - 244	12999	Ala-1 to Gly-19.	H0250: 2
HMQB0W05	932509	3248	29 - 160	13000		H0250: 1 and H0318: 1.
HMQB0W76	954587	3249	2 - 217	13001	Glu-2 to His-7	H0161: 3 and H0250: 2.
HMQB0X07	954058	3250	34 - 267	13002	Pro-8 to Ala-16.	H0250: 3
HMQB0X35	707280	3251	57 - 365	13003	Pro-22 to Glu-27.	H0250: 2



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HMSAO46	720686	3274	204 - 368	13026	Pro-26 to Cys-31.	S0002: 2	
HMSAP87	383902	3275	1 - 153	13027		S0002: 2	
HMSAQ64	747120	3276	3 - 167	13028		L0750: 3, L0551: 2, L0748: 2, H0486: 1, L0455: 1, H0264: 1, S0002: 1, L0764: 1, L0791: 1 and L0740: 1.	
HMSAS62	754156	3277	245 - 358	13029		S0002: 2	
HMSAX08	960446	3278	84 - 233	13030		S0002: 3	
HMSAX13	961032	3279	140 - 334	13031		S0002: 2	
HMSAX31	698439	3280	2 - 160	13032	Asn-18 to Gln-23, Gln-30 to Asp-36.	S0002: 2	
HMSAX32	702992	3281	56 - 247	13033	Arg-4 to Cys-10, Val-26 to Ser-34, His-49 to Ser-58.	S0002: 3	
HMSAX33	727443	3282	257 - 463	13034	Gln-34 to Gln-39.	S0002: 2	
HMSAX85	953708	3283	26 - 160	13035	Asn-15 to Leu-22, Arg-39 to Gly-44.	S0002: 3, H0272: 1 and S0426: 1.	
HMSAZ07	855878	3284	2 - 199	13036	Gly-33 to Gly-43.	S0002: 2	
HMSBB19	707489	3285	172 - 378	13037	Leu-2 to Ile-13.	L0766: 4, L0743: 2, H0457: 1, S0002: 1, L0761: 1 and L0775: 1.	
HMSBB44	715738	3286	190 - 336	13038		S0002: 2	
HMSBF59	722005	3287	43 - 237	13039	Thr-53 to Trp-58.	S0002: 3	
HMSBF84	739001	3288	16 - 102	13040	Gln-7 to Phe-14, Pro-23 to Arg-29.	H0591: 1 and S0002: 1.	
HMSBH79	683505	3289	82 - 252	13041		S0002: 3	
HMSBI72	925288	3290	149 - 268	13042		S0002: 2	
HMSBM43	510964	3291	176 - 3	13043	Pro-15 to His-27, Asp-35 to Gln-47.	H0265: 1, S0002: 1 and S0052: 1.	
	855873	9571	221 - 487	13023	Val-2 to Gln-14, Trp-29 to Ser-36.		
HMSBM81	383978	3292	32 - 271	13044	Arg-8 to Arg-18.	S0002: 2	
HMSBN71	766408	3293	15 - 176	13045		S0002: 2	
HMSBO55	715684	3294	2 - 148	13046	Lys-1 to Asn-10, Lys-44 to Arg-49.	S0002: 2 and L0766: 2.	
HMSBP46	719425	3295	28 - 138	13047		S0002: 2	

HMSBP80	853871	3296	153 - 386	13048	Thr-1 to Arg-7.	AR054: 18, AR051: 11, AR050: 1 S0002: 10
HMSBO93	745862	3297	232 - 420	13049		S0002: 2
HMSBS51	708662	3298	167 - 307	13050		S0002: 2
HMSBS63	926833	3299	214 - 399	13051		H0271: 1, S0002: 1 and S0426: 1.
HMSBS86	785804	3300	1 - 237	13052	Gln-25 to Gly-30, Ser-51 to Gly-59.	S0002: 2
HMSBU22	677327	3301	1 - 171	13053		S0002: 2
HMSBU68	709231	3302	193 - 306	13054		S0002: 2
HMSBV28	970579	3303	97 - 270	13055	Asn-26 to Tyr-35.	S0002: 2
HMSBX38	761392	3304	121 - 324	13056		S0002: 2 and L0748: 1.
HMSBX59	558203	3305	2 - 211	13057		S0002: 2, L0783: 1 and L0809: 1.
HMSBZ69	866997	3306	2 - 697	13058	Ala-14 to Ser-19.	S0002: 2, H0580: 1, L0803: 1 and L0749: 1.
HMSCA33	702821	3307	89 - 397	13059	Ser-1 to Asn-8, Glu-83 to Ser-90.	H0641: 2, S0002: 2, L0766: 2, L0438: 2, L0439: 2, H0657: 1, H0638: 1, H0637: 1, L0763: 1, L0768: 1, L0794: 1, L0655: 1, H0521: 1, H0522: 1, L0779: 1, L0777: 1 and S0026: 1.
HMSCB10	968514	3308	43 - 198	13060	Ser-25 to Arg-32.	H0265: 1, H0581: 1 and S0002: 1.
HMSCD14	924890	3309	1 - 138	13061	Pro-11 to Gly-18.	S0114: 1 and S0002: 1.
HMSCD15	918133	3310	237 - 635	13062		AR089: 1, AR061: 1 S0002: 2 and L0766: 1.
HMSCD45	707281	3311	144 - 236	13063	Ile-1 to Glu-6.	S0002: 2
HMSCE07	954242	3312	21 - 236	13064	Arg-32 to Gly-38.	S0002: 2 and S0426: 1.
HMSCE37	524245	3313	63 - 185	13065	Thr-1 to Leu-6, Asn-19 to Arg-28.	S0002: 2
HMSCF41	951821	3314	532 - 753	13066		H0265: 1, H0556: 1, H0657: 1, S0002: 1, L0761: 1 and H0445: 1.

HMSCF54	731011	3315	108 - 218	13067	Lys-13 to Glu-24.	S0002: 1 and H0522: 1.	
HMSCF58	747250	3316	1 - 87	13068	His-13 to Gly-23.	S0002: 2	
HMSCI26	530239	3317	499 - 663	13069	Arg-30 to Glu-37.	S0114: 1, S0002: 1 and S0053: 1.	
HMSCCK06	960601	3318	152 - 358	13070		S0114: 1 and S0002: 1.	
HMSCCK17	717703	3319	121 - 420	13071		S0114: 2, H0556: 1, S0134: 1, H0255: 1, H0069: 1, H0625: 1 and S0002: 1.	
HMSCCK38	967576	3320	416 - 664	13072		H0069: 1, S0002: 1 and S0426: 1.	
HMSCLO1	921754	3321	3 - 146	13073	Pro-23 to Tyr-30.	S0002: 2	
HMSCM10	926836	3322	14 - 253	13074	Gly-5 to Ser-11, Gly-35 to Ile-42.	S0002: 1, S0426: 1, L0529: 1, L0543: 1 and L0748: 1.	
HMSCM95	884019	3323	44 - 124	13075		S0002: 2	
HMSCO18	917009	3324	218 - 451	13076	His-36 to Ser-55, Thr-61 to Thr-67.	S0002: 2 and S0426: 2.	
HMSCO39	709592	3325	51 - 170	13077	Thr-11 to Ser-29, Asp-34 to Tyr-40.	S0002: 2	
HMSCO60	739685	3326	124 - 291	13078		S0002: 2 and L0599: 1.	
HMSCO70	879436	3327	8 - 370	13079	Pro-65 to Asp-72.	H0576: 2, S0002: 1 and L0599: 1.	
HMSCR39	601504	3328	454 - 248	13080	Asp-5 to Ser-11, Cys-25 to Ser-32.	H0402: 1 and S0002: 1.	
HMSCR82	806176	3329	169 - 264	13081		S0002: 2	
HMSCU35	725513	3330	1 - 570	13082	Asn-1 to Ala-14, Pro-16 to Glu-23, Arg-29 to Asn-54.	S0002: 2 and S0426: 1.	
HMSCY29	703105	3331	197 - 334	13083	Lys-1 to Pro-8, Ser-13 to Ala-19.	S0002: 2 and L0774: 2.	
HMSCY91	789306	3332	434 - 195	13084		H0580: 1 and S0002: 1.	
HMSCZ51	724839	3333	3 - 125	13085		S0002: 2	
HMSDA03	881563	3334	91 - 345	13086		S0002: 2 and H0341: 1.	
HMSDB74	765933	3335	74 - 271	13087	Val-23 to Ile-37.	S0114: 1 and S0002: 1.	
HMSDD80	503967	3336	149 - 577	13088	Ala-36 to Trp-54, Lys-72 to Leu-82.	L0748: 3, S0002: 2 and L0740: 2.	
HMSDF01	921672	3337	138 - 317	13089		S0002: 2	

HMSDG77	708078	3338	18 - 353	13090	Ser-15 to Ser-25, Glu-31 to Ala-39, His-76 to Glu-90.	S0002: 2	
HMSDK32	416928	3339	51 - 266	13091		S0002: 2	
HMSDM29	703075	3340	27 - 164	13092		S0002: 2	
HMSDP23	583670	3341	106 - 324	13093		H0264: 2, S0002: 1 and H0543: 1.	
HMSDQ33	702772	3342	1 - 240	13094	Ala-7 to Ala-13, Asp-48 to Glu-57.	S0002: 2 and L0700: 1.	
HMSDR06	954682	3343	2 - 127	13095	Asp-6 to Phe-12.	S0002: 2	
HMSDR55	732443	3344	76 - 198	13096		S0002: 2	
HMSDU43	868183	3345	290 - 3	13097	Leu-6 to Leu-13, Glu-19 to Ser-31, Thr-37 to Leu-43, Lys-87 to Lys-96.	S0002: 2, H0305: 1, L0774: 1 and L0779: 1.	
HMSDU73	753010	3346	3 - 128	13098		H0486: 1 and S0002: 1.	
HMSDV49	722194	3347	23 - 142	13099	Pro-26 to Gly-31.	S0002: 2	
HMSDG37	708656	3348	1 - 216	13100		S0002: 2, L0790: 1 and L0438: 1.	
HMSDM59	708076	3349	2 - 55	13101	Lys-7 to Lys-13.	S0002: 2	
HMSDM80	718087	3350	54 - 170	13102		S0002: 2	
HMSDQ23	676369	3351	236 - 406	13103	His-25 to Phe-33, Ser-36 to Asp-41.	S0002: 2	
HMSDU01	921628	3352	11 - 178	13104	Glu-1 to Ser-8.	S0002: 2	
HMSFH05	932219	3353	1 - 165	13105	Ser-13 to Gly-23.	S0002: 2	
HMSFH21	671133	3354	46 - 288	13106	Lys-18 to Glu-35, Glu-57 to Gly-62, Gly-73 to Thr-78.	S0002: 3	
HMSFH24	855826	3355	88 - 258	13107		S0002: 2	
HMSFH27	682204	3356	30 - 197	13108	Leu-1 to Glu-8, Glu-11 to Ala-22, Leu-28 to Asp-39.	S0002: 2	
HMSFH29	689857	3357	1 - 156	13109		S0002: 2	
HMSFH31	583757	3358	354 - 1	13110		S0002: 2 and S0114: 1.	
	693702	9572	88 - 396	19324			
HMSFH34	706349	3359	24 - 194	13111		S0002: 2	

HMSFH39	705586	3360	168 - 269	13112	Glu-7 to Lys-12.	S0002: 4 and L0731: 1.	
HMSFH39	739415	3361	92 - 214	13113	Ser-5 to Lys-10.	S0002: 2	
HMSFH73	764554	3362	87 - 182	13114		S0002: 2	
HMSFH79	775318	3363	2 - 220	13115		S0002: 3	
HMSFH83	780301	3364	1 - 198	13116	Leu-54 to Asp-60.	S0002: 2	
HMSFK32	671136	3365	125 - 241	13117		S0002: 2	
HMSFL10	968061	3366	63 - 269	13118	Thr-14 to Trp-25, Arg-56 to Cys-69.	S0002: 2	
HMSFL41	934139	3367	289 - 471	13119		S0002: 2, S0426: 1, L0438: 1 and H0543: 1.	
HMSFL49	683406	3368	79 - 300	13120	Ser-24 to Cys-29, Asp-35 to Arg-50, Glu-61 to Asp-69.	S0002: 2	
HMSFN48	697991	3369	285 - 458	13121		S0002: 3 and H0422: 1.	
HMSFQ48	721795	3370	3 - 323	13122	Glu-18 to Phe-24, Trp-36 to Arg-44, Gly-62 to Trp-71, His-73 to Asn-79.	S0002: 3, H0179: 1, L0645: 1, S0428: 1 and H0444: 1.	
HMSFQ69	657538	3371	68 - 235	13123	Glu-9 to Glu-14, Arg-41 to Met-47, Glu-49 to Arg-54.	S0426: 2, S0002: 1, L0770: 1 and S0052: 1.	
HMSFR29	693440	3372	43 - 165	13124	Thr-1 to Asn-7, Tyr-12 to Ser-22.	S0114: 1 and S0002: 1.	
HMSFR69	738588	3373	267 - 34	13125	Phe-3 to Pro-24.	S0002: 3	
HMSFR71	760517	3374	129 - 212	13126		S0002: 2	
HMSFR92	861344	3375	275 - 463	13127		S0002: 2 and S0426: 2.	
HMSFS59	739420	3376	75 - 284	13128	Lys-10 to Tyr-17.	S0002: 2	
HMSFS69	757687	3377	2 - 157	13129	Gly-12 to Ala-18.	S0002: 3	
HMSFT23	855812	3378	1 - 240	13130	Glu-38 to Gly-51.	S0002: 2	
HMSFT52	727302	3379	50 - 409	13131	Glu-7 to Glu-15, Gly-35 to Ser-44, Arg-84 to Lys-91.	H0087: 1, S0002: 1 and L0748: 1.	123620, 151410, 600850
HMSFI73	761647	3380	182 - 337	13132		S0002: 2 and H0581: 1.	
HMSFW13	917020	3381	3 - 221	13133		S0002: 2	
HMSFX01	917021	3382	225 - 428	13134	Cys-1 to Ser-6.	S0002: 4 and L0753: 1.	

HMSFX08	959784	3383	73 - 198	13135	Leu-34 to Gln-42.	S0002: 1 and S0426: 1.
HMSFY49	574906	3384	2 - 166	13136	Ser-15 to Phe-20.	S0002: 3 and S0426: 1.
HMSFY70	757338	3385	50 - 142	13137	Leu-3 to Asn-11.	S0002: 3
HMSFZ04	615473	3386	3 - 134	13138		H0118: 1 and S0002: 1.
HMSGA34	706355	3387	16 - 192	13139		S0002: 2
HMSGA41	712490	3388	300 - 470	13140		S0002: 2 and S0218: 1.
HMSGB07	953715	3389	135 - 344	13141	Pro-10 to Lys-18.	S0002: 2
HMSGC69	757337	3390	49 - 183	13142		S0002: 2
HMSGC76	767661	3391	1 - 357	13143	Pro-21 to Ala-30.	S0002: 2
					Lys-32 to Leu-46.	
HMSGD02	920525	3392	232 - 372	13144	Gln-1 to Phe-8.	S0114: 1 and S0002: 1.
					Leu-11 to Pro-17.	
HMSGD15	959468	3393	95 - 346	13145	Leu-37 to Trp-44.	
HMSGH49	712123	3394	260 - 406	13146	Trp-50 to Ala-60.	S0002: 2
HMSGI42	712994	3395	132 - 353	13147		H0580: 1 and S0002: 1.
HMSGK16	861329	3396	151 - 594	13148	Arg-46 to Gln-71, Pro-83 to Pro-88, Gly-107 to Gln-122, Lys-138 to Arg-148.	S0002: 3, S0426: 2, H0580: 1, H0486: 1 and L0748: 1.
					Met-14 to Asn-24.	
HMSGK62	778875	3397	35 - 184	13149	Ser-96 to Ala-102.	S0002: 1 and H0521: 1.
HMSGK27	638097	3398	213 - 527	13150		AR051: 35, AR054: 29, AR089: 24, AR050: 20, AR061: 7
						S0002: 1, L0766: 1 and H0445: 1.
	855759	9573	318 - 127	19325	Cys-8 to Gly-28, Pro-31 to Gln-36.	
HMSGP45	699243	3399	219 - 440	13151	Gln-1 to Glu-7.	S0002: 2 and H0179: 1.
HMSGP49	723131	3400	3 - 254	13152	Pro-1 to Ser-8, Tyr-26 to Ser-32.	S0002: 3
					Asp-48 to Met-55, Cys-59 to Ala-65, Leu-72 to Ser-87, Thr-104 to Phe-115.	L0766: 3, H0179: 1, S0002: 1, L0761: 1 and L0786: 1.
HMSGP73	925385	3401	63 - 974	13153		

HMSGQ30	692880	3402	24 - 242	13154		S0002: 2
HMSGQ57	733869	3403	143 - 277	13155		S0002: 2 and H0271: 1.
HMSCR88	575241	3404	1 - 204	13156		S0002: 2
HMSGT45	722069	3405	128 - 253	13157		H0179: 1 and S0002: 1.
HMSGU52	727300	3406	2 - 154	13158	Pro-29 to Lys-38.	S0002: 2
HMSGU76	677512	3407	201 - 296	13159	Lys-10 to Cys-17, Glu-20 to Gly-27, Leu-2 to Pro-7.	S0002: 2
HMSGU89	963497	3408	7 - 252	13160		S0002: 1 and H0571: 1.
HMSGV47	920116	3409	151 - 297	13161		S0002: 2 and L0523: 1.
HMSGW16	767621	3410	187 - 357	13162		S0002: 3
HMSGX02	920511	3411	84 - 224	13163	Gly-8 to Leu-22.	S0002: 2
HMSGX12	792437	3412	3 - 137	13164	Glu-1 to Ala-8.	H0638: 1, S0142: 1 and S0002: 1.
HMSGX14	871492	3413	19 - 171	13165	Lys-41 to Thr-50.	AR089: 14, AR061: 5 S0002: 2 and S0052: 2.
HMSGX43	715425	3414	12 - 149	13166	Asp-37 to Phe-46.	S0002: 2
HMSHA04	757509	3415	118 - 249	13167		S0002: 2
HMSHA37	708660	3416	239 - 343	13168	Tyr-30 to Pro-35.	S0002: 2
HMSHB10	964651	3417	142 - 378	13169		S0002: 2
HMSHB14	657543	3418	3 - 269	13170	Glu-69 to Gly-80, Val-83 to His-89.	H0318: 1 and S0002: 1.
HMSHC94	960196	3419	3 - 245	13171	Cys-27 to Ala-34.	S0002: 2
HMSHD50	724397	3420	1 - 213	13172	Lys-7 to Tyr-27, Phe-36 to Ser-43, Pro-53 to Glu-59, Asn-65 to Trp-71.	S0002: 2
HMSHE51	725692	3421	269 - 361	13173		S0002: 2
HMSHE55	923378	3422	2 - 445	13174	Pro-42 to Cys-48, Ala-69 to Leu-97, Gly-103 to Asn-108.	S0114: 1, S0134: 1, S0344: 1 and S0002: 1.
HMSHG24	676545	3423	3 - 362	13175	Cys-9 to Gly-21, Glu-35 to Arg-41.	S0002: 1 and S0052: 1.
HMSHI54	920119	3424	3 - 257	13176	Pro-35 to Phe-43, Glu-62 to His-67, Arg-79 to Leu-84.	S0002: 2



HMSHI94	967167	3425	331 - 591	13177	Gln-20 to Gly-35, Val-43 to Thr-51, Phe-70 to Gly-77.	AR089: 3, AR061: 1 H0271: 1, S0002: 1 and L0766: 1.	1p35-p34	118210, 120550, 120570, 120575, 121800, 130500, 133200, 138140, 138971, 168360, 171760, 171760, 172411, 176100, 176100, 178300, 185470, 230000, 230350, 255800, 602771
HMSHK14	920106	3426	101 - 271	13178		S0002: 2		
HMSHL09	789229	3427	1 - 171	13179		H0264: 1 and S0002: 1.		
HMSHL18	690655	3428	2 - 151	13180		S0002: 3, L0766: 3, L0779: 2, L0664: 1 and L0755: 1.		
HMSHL85	773811	3429	124 - 252	13181	Lys-7 to Lys-13.	S0002: 2		
HMSHLM28	855792	3430	335 - 478	13182	Pro-43 to Ala-48.	S0002: 2 and L0759: 1.		
HMSHO64	746582	3431	1 - 411	13183	Ser-11 to Ser-21, Ser-84 to Ala-89, Pro-98 to Arg-107.	AR089: 2, AR061: 2 S0002: 2		
HMSHP08	868170	3432	100 - 378	13184		S0002: 2		
HMSHQ07	953389	3433	292 - 447	13185		S0002: 1 and S0426: 1.		
HMSHR29	924813	3434	2 - 361	13186	Arg-23 to Arg-34, Pro-43 to Ala-51, Asn-85 to Val-90.	H0318: 1 and S0002: 1.		
HMSHR64	746587	3435	184 - 291	13187		S0002: 2		
HMSHT10	964647	3436	28 - 336	13188	Asp-26 to Asp-32, Gly-67 to Pro-72.	S0002: 2		
HMSHT46	959516	3437	59 - 193	13189		S0052: 6 and S0002: 1.		
HMSHU10	964646	3438	213 - 413	13190	Lys-16 to His-25, Leu-27 to His-32.	S0002: 1 and S0426: 1.		
HMSHU55	731775	3439	28 - 519	13191	Ser-6 to Arg-11, Phe-25 to Thr-36, Val-54 to Arg-59, Pro-70 to Asn-80, Arg-106 to Asp-115.	H0264: 1 and S0002: 1.		

HMSHV09	731740	3440	169 - 324	13192	Gly-125 to Ala-132.	S0002: 2
HMSHV44	716596	3441	191 - 496	13193	Asp-25 to Ser-30.	S0002: 1, S0426: 1 and L0748: 1.
HMSHW22	855779	3442	159 - 344	13194	Asp-15 to Lys-22.	S0002: 2
HMSHW84	783036	3443	69 - 191	13195	Arg-28 to Ile-35.	H0087: 1 and S0002: 1.
HMSHW93	792302	3444	132 - 287	13196	Arg-18 to Gly-27.	S0002: 1, S0426: 1 and L0754: 1.
HMSHY07	953331	3445	1 - 147	13197	Tyr-21 to Gly-28.	S0002: 2
HMSHZ03	924136	3446	2 - 262	13198	Arg-1 to Leu-17.	S0002: 1 and S0426: 1.
					Pro-40 to Gly-48.	
					Ala-64 to Gln-74.	
HMSHZ56	733386	3447	127 - 315	13199	Gly-1 to Lys-11.	S0002: 2
					Ser-38 to Leu-44.	
HMSIA12	948521	3448	3 - 212	13200	Asp-1 to Arg-9.	S0002: 1 and S0426: 1.
					Pro-15 to Pro-24.	
					Ala-30 to Ser-38.	
					Pro-48 to Gln-59.	
HMSIB73	578777	3449	252 - 416	13201	Ser-42 to Cys-49.	S0142: 2 and S0002: 1.
HMSIB86	785493	3450	64 - 468	13202	Thr-53 to Gly-60.	S0002: 2
HMSIC37	685586	3451	35 - 226	13203	Arg-3 to Asp-9.	S0002: 2
HMSIC72	740365	3452	245 - 364	13204	Glu-9 to Gly-14.	S0002: 2
HMSID81	774047	3453	2 - 454	13205		S0002: 6
HMSIE11	967013	3454	58 - 138	13206		S0212: 1 and S0002: 1.
HMSIE52	727146	3455	115 - 321	13207	Ser-9 to Ser-14.	S0002: 2
					Lys-17 to Asn-28.	
					Leu-32 to Asn-37.	
					Glu-44 to Thr-50.	
HMSIG74	725842	3456	183 - 308	13208		L0748: 2, H0083: 1 and S0002: 1.
HMSIH81	385937	3457	36 - 191	13209		S0002: 2
HMSIJ85	916552	3458	2 - 151	13210		H0402: 1 and S0002: 1.
HMSIN64	963441	3459	2 - 262	13211	Thr-18 to Asp-27.	S0426: 2 and S0002: 1.
					Pro-37 to Arg-61.	
HMSIN75	728670	3460	66 - 305	13212		S0002: 2

HMSIO61	741811	3461	200 - 394	13213	Leu-8 to Gly-13, Arg-19 to Gln-24, Arg-36 to Gly-43, Gln-45 to Leu-52.	S0002: 2	
HMSIO76	767680	3462	111 - 410	13214			
HMSIP13	792379	3463	193 - 465	13215	Ilc-32 to Ser-37, Lys-55 to His-64.	S0002: 2 H0436: 1.	
HMSIP59	739275	3464	1 - 294	13216	Asn-1 to Asn-7, Pro-11 to Gln-16.	H0265: 1 and S0002: 1. S0002: 1 and H0423: 1.	
HMSIS02	920078	3465	330 - 1	13217			
HMSIT63	745068	3466	150 - 329	13218	Val-1 to Ser-8, Pro-19 to Trp-25.	H0069: 1 and S0002: 1. S0002: 2	
HMSIT73	708077	3467	76 - 222	13219	Gln-1 to Gly-8, Lys-20 to Val-49.	S0002: 2	
HMSIU50	706363	3468	29 - 178	13220			
HMSIV17	712318	3469	286 - 519	13221		S0002: 2	
HMSJA36	685633	3470	158 - 256	13222		H0083: 1 and S0002: 1.	
HMSIA69	745227	3471	223 - 336	13223		S0002: 2	
HMSJB02	920065	3472	225 - 566	13224	Ser-31 to Ala-44.	S0002: 3	
HMSJB64	969637	3473	69 - 308	13225		S0002: 1 and S0426: 1.	17
HMSJB83	781172	3474	107 - 316	13226	Pro-1 to Phe-9, Ser-43 to His-50.	S0002: 2	
HMSJB93	676414	3475	144 - 359	13227	Thr-6 to Lys-15.	S0002: 2	
HMSJE47	928252	3476	81 - 230	13228		S0002: 1 and S0426: 1.	
HMSJE52	868167	3477	96 - 335	13229	Gln-32 to Gly-41.	S0002: 2	
HMSIE69	513164	3478	609 - 307	13230		H0457: 3 and S0002: 1.	
HMSJH79	855775	9574	229 - 471	19326	Arg-49 to Trp-56.		
HMSIJ22	760667	3479	211 - 432	13231	Ala-3 to Arg-26.	S0002: 1 and H0445: 1.	
HMSIJ24	674557	3480	3 - 230	13232		H0179: 1 and S0002: 1.	
HMSIJ24	928152	3481	306 - 467	13233	Thr-1 to Val-6.	H0370: 1, H0318: 1 and S0002: 1.	
HMSIJ83	781094	3482	320 - 177	13234	Ser-12 to His-18.	S0002: 2 and S0053: 2.	
HMSIL41	922753	3483	1 - 114	13235		H0370: 1 and S0002: 1.	
HMSIM33	702408	3484	74 - 424	13236	Asp-13 to His-22, Pro-41 to Lys-46.	S0002: 2	

HMSIO36	708084	3485				Pro-83 to Leu-88.			
				13237		Leu-13 to Gln-26.			S0002: 3
HMSIO44	716600	3486	208 - 339 3 - 392	13238		Arg-7 to Leu-14, Ser-31 to Gln-37, Glu-44 to Ser-56, Gly-79 to Lys-87, Ala-92 to Arg-99, Pro-116 to Gln-127. Leu-11 to Thr-22.			S0002: 1 and H0436: 1.
HMSIR07	854106	3487	270 - 449	13239					H0075: 1, S0002: 1 and L0363: 1.
HMSIR27	855760	3488	352 - 215	13240					L0749: 2, H0264: 1 and S0002: 1.
HMSIR41	967070	3489	130 - 255	13241		Asp-6 to Thr-12.			S0002: 2
HMSIR74	710402	3490	87 - 413	13242		Thr-1 to Val-18.			H0556: 2, H0265: 1 and S0002: 1.
HMSIT11.	965007	3491	22 - 1185	13243		Gln-15 to Val-23.			S0002: 3, L0777: 3, L0598: 2, L0521: 2, L0794: 2, L0731: 2 and L0768: 1.
HMSIT60	733379	3492	63 - 191	13244		Asn-13 to Pro-19, Ser-34 to Phe-41.			S0002: 2
HMSIT70	750465	3493	88 - 300	13245		Ala-4 to Leu-10.			S0116: 1 and S0002: 1.
HMSIT79	954141	3494	3 - 221	13246		Arg-63 to Ser-72.			S0002: 3
HMSIU28	686664	3495	38 - 214	13247					S0002: 2
HMSIV67	751602	3496	68 - 397	13248		Leu-31 to Leu-37, Ser-57 to Trp-66, Thr-83 to Phe-95.			S0002: 2
HMSIW12	902568	3497	2704 - 3138	13249		Arg-15 to Tyr-26, Asn-56 to Lys-63, Cys-90 to Leu-95, Ser-129 to Gly-134, Pro-137 to Gln-143.			S0002: 1 and S0426: 1.
	970011	9575	1181 - 1399	19327		Arg-15 to Tyr-26,			
	970012	9576	395 - 3	19328		Asn-56 to Lys-63, Cys-90 to Leu-95.			
HMSIW19	744990	3498	2 - 535	13250		Arg-27 to Pro-32.			AR089: 9, AR061: 4

HMSIW25	678096	3499	337 - 546	13251	Trp-1 to Ser-15 Gln-23 to Gly-29.	S0002: 1 and S0426: 1. H0589: 1 and S0002: 1.
HMSIZ11	861381	3500	259 - 468	13252	Pro-16 to Trp-24.	S0344: 1 and S0002: 1.
HMSKB02	920056	3501	203 - 436	13253	S0002: 2	S0002: 2
HMSKB24	855883	3502	32 - 208	13254	S0002: 3	S0002: 3
HMSKC56	733388	3503	197 - 409	13255	Glu-13 to Glu-21.	S0002: 2
HMSKC66	783028	3504	129 - 338	13256	Ser-28 to Cys-33.	S0002: 2
HMSKC90	675055	3505	2 - 178	13257	S0002: 3	S0002: 3
HMSKF32	699273	3506	142 - 237	13258	S0002: 2	S0002: 2
HMSKF62	966084	3507	1 - 249	13259	Arg-10 to Ala-17.	H0556: 1 and S0002: 1.
HMSKG23	675885	3508	3 - 170	13260	His-14 to Ser-27.	S0002: 2
HMSKI08	959413	3509	70 - 522	13261		H0581: 1 and S0002: 1.
HMSKQ60	495734	3510	525 - 274	13262		H0271: 1 and S0002: 1.
HMSKS66	953525	9577	107 - 346	13263	Lys-43 to Met-49.	S0002: 2
HMSKU36	966289	3512	3 - 386	13264	Thr-14 to Thr-20, Asn-92 to Lys-99, Arg-120 to Arg-128.	S0002: 2 and H0543: 1.
HMSKU90	920151	3513	385 - 648	13265	His-69 to Arg-78.	S0002: 1, S0052: 1 and S0428: 1.
HMSKZ29	690662	3514	274 - 50	13266	Lys-8 to Ser-13.	S0002: 1 and S0002: 1.
HMSLB94	773812	3515	187 - 330	13267		S0002: 2
HMSME83	950970	3516	251 - 523	13268		H0271: 1 and S0426: 1.
HMSMFI2	948393	3517	286 - 456	13269		S0426: 2 and H0380: 1.
HMSMG02	915179	3518	8 - 226	13270	Ser-30 to Phe-38, Pro-46 to Ala-56.	S0426: 2
HMSMH05	931095	3519	109 - 318	13271		S0053: 2 and S0426: 1.
HMSMI12	969636	3520	60 - 359	13272		S0426: 2
HMSMK12	841898	3521	466 - 326	13273	Gly-29 to Phe-39.	S0426: 1 and S0216: 1.
HMSML27	870008	3522	124 - 279	13274		H0272: 1 and S0426: 1.
HMSMN04	926746	3523	42 - 113	13275		S0426: 2
HMSMIN23	932548	3524	358 - 639	13276	Arg-2 to Thr-9.	H0179: 1, S0426: 1 and L0748: 1.
HMSMQ05	931022	3525	29 - 109	13277		S0426: 2

HMSMV92	934140	3526	291 - 515	13278			S0426: 2		
HMSMX68	861333	3527	233 - 424	13279	Ser-48 to Leu-56.		H0402: 2 and S0426: 2.		
HMSNA44	861293	3528	171 - 629	13280	His-13 to Lys-23, Asp-33 to Gly-39.		S0426: 2	22q13.31	250100, 250800, 250800
HMSNR30	968716	3529	260 - 382	13281			T0002: 1, S0426: 1 and L0748: 1.		
HMSNR92	861314	3530	126 - 488	13282	Thr-30 to Arg-36, His-43 to Ser-50, Ser-69 to Leu-75, Ala-80 to Gly-94.		S0426: 2		
HMSNX38	974321	3531	412 - 597	13283			S0426: 1 and H0521: 1.		
HMSOA29	953329	3532	164 - 361	13284	Glu-28 to Glu-35, Arg-44 to Pro-52.		S0002: 2, S0134: 1 and S0426: 1.		
HMSOA34	936036	3533	390 - 605	13285	Pro-6 to Pro-15.		S0114: 1 and S0426: 1.		
HMSOB43	961779	3534	103 - 204	13286	Glu-10 to Tyr-27.		H0255: 1, H0306: 1 and S0426: 1.		
HMSOC76	916807	3535	153 - 251	13287	Tyr-1 to Lys-9.		H0402: 1 and S0426: 1.		
HMSOE03	922858	3536	282 - 413	13288			S0426: 1 and H0422: 1.		
HMSOG57	861298	3537	270 - 530	13289	Tyr-1 to Ser-9.		S0426: 2 and L0748: 1.		
HMSOM08	958216	3538	2 - 247	13290	Pro-29 to Arg-34, Lys-68 to His-73.		H0063: 1 and S0426: 1.		
HMSON02	918397	3539	330 - 136	13291			S0140: 1, S0426: 1 and L0369: 1.		
HMSONT7	861288	3540	625 - 407	13292			S0426: 2		
HMSOO10	963389	3541	526 - 356	13293			S0114: 1 and S0426: 1.		
HMSOP01	915083	3542	35 - 211	13294	Gln-50 to Val-55.		S0426: 2 and S0002: 1.		
HMSOOQ75	959856	3543	3 - 257	13295	Ala-9 to Phe-15.		H0250: 1 and S0426: 1.		
HMSOUI6	948198	3544	2 - 253	13296			H0179: 1, S0002: 1 and S0426: 1.		
HMSOU92	947760	3545	268 - 74	13297			AR089: 10, AR061: 5 S0426: 2 and L0596: 2.		
HMSOV17	835834	3546	311 - 508	13298			S0426: 1, L0748: 1 and H0543: 1.		
HMSOW85	827823	3547	79 - 312	13299	His-8 to Gly-18, Ser-64 to His-77.		H0341: 1 and S0426: 1.		

HMSOX47	948202	3548	56 - 541	13300	His-8 to Gly-18, Asp-31 to Arg-37, Ala-70 to Pro-75, Arg-115 to Val-122.	S0426: 2		
HMSOY61	836082	3549	13 - 249	13301		S0426: 1 and H0521: 1.		
HMSOZ02	918388	3550	417 - 115	13302	Ser-12 to Phe-26, Ser-84 to Arg-96.	L0749: 4, L0748: 2, L0731: 2, H0657: 1, S0426: 1, L0777: 1 and H0423: 1.		
HMSOZ19	958680	3551	183 - 290	13303		S0426: 2 and H0591: 1.		
HMSPA04	922863	3552	136 - 345	13304	Lys-1 to Lys-26, Lys-33 to Asp-44.	S0426: 2		
HMSPA09	948209	3553	3 - 161	13305	Lys-18 to Ser-24, Pro-38 to His-44, Gln-46 to Cys-53.	S0002: 1 and S0426: 1.		
HMSPA41	951971	3554	66 - 638	13306	Ala-17 to Gly-25, Thr-27 to Gly-40, Pro-46 to Pro-66, Pro-77 to Pro-85, Pro-88 to Ala-106.	S0426: 1 and H0542: 1.		
HMSPB03	922853	3555	243 - 392	13307	Arg-1 to Arg-8, Val-12 to Gly-18, Ala-36 to Pro-50.	S0426: 3		
HMSPB63	861264	3556	434 - 604	13308		S0002: 1 and S0426: 1.		
HMSPE92	948104	3557	53 - 238	13309	His-8 to Gly-18, Gly-31 to Ser-38, Met-54 to Ser-61.	H0305: 1 and S0426: 1.		
HMV AJ53	728009	3558	3 - 401	13310		S0212: 1 and H0318: 1.	5q34	109690, 109690, 123101, 180071, 600584
HMV AL74	684574	3559	395 - 532	13311	Lys-1 to Thr-6.	S0212: 1 and H0255: 1.		
HMV AT26	789064	3560	1 - 174	13312	Pro-53 to Cys-58.	S0212: 1 and H0422: 1.		
HMV AW08	962197	3561	178 - 267	13313		S0212: 2	7q22-q31	126650, 126650, 154276, 164860, 173360, 173360, 180105, 222800, 246900, 274600,

HMVA55	574215	3562	1 - 240	13314	Gln-1 to Gly-17, Arg-27 to Glu-35, Gly-41 to Gly-50, Pro-59 to Arg-74.	H0271: 2, L0747: 2, S0212: 1, L0788: 1, H0521: 1 and L0740: 1.	Sq12-q13	274600, 602081, 602136, 602136, 602447, 126060, 143200, 143200, 181510, 253200, 268800, 268800, 600354, 600354, 600887
HMVBA36	698060	3563	113 - 304	13315	Glu-15 to Lys-26, Asn-37 to Thr-64.	S0212: 1 and H0421: 1.		
HMVBD70	735696	3564	86 - 277	13316	Ser-3 to Glu-12, Ser-48 to Phe-53.	S0212: 1 and H0580: 1.		
HMVBD84	782910	3565	38 - 268	13317		S0212: 1 and H0612: 1.		
HMVBO01	916072	3566	1 - 336	13318	Ser-5 to His-11.	L0777: 2, S0212: 1, H0402: 1, L0055: 1 and L0603: 1.		
HMVBO34	735873	3567	970 - 764	13319	Ser-1 to Asp-8.	S0114: 1, S0212: 1 and L0769: 1.		
HMVB026	681408	3568	162 - 341	13320	Leu-15 to Ser-20.	S0212: 1, H0486: 1, L0659: 1 and L0757: 1.		
HMVBV30	861196	3569	123 - 272	13321	Arg-9 to Arg-23.	S0212: 1, T0071: 1 and L0750: 1.		
HMVBW94	883659	3570	2 - 214	13322	Ala-9 to Pro-18.	S0212: 2		
HMVCG47	719936	3571	317 - 412	13323	His-4 to His-10.	S0212: 2		
HMVCO55	868146	3572	2 - 232	13324	Met-8 to Gly-13, Glu-19 to Cys-26.	S0212: 2		
HMVCR47	661425	3573	340 - 459	13325		S0212: 2		
HMVCT75	715950	3574	2 - 151	13326		S0212: 1 and H0318: 1.		
HMVCX10	963828	3575	289 - 474	13327	Tyr-11 to Gln-20.	S0212: 2 and L0756: 1.		
HMVCY46	662311	3576	252 - 371	13328		S0212: 2		
HMVCZ64	767714	3577	130 - 315	13329	Pro-17 to Trp-23.	S0212: 2		
HMVDA11	861185	3578	3 - 215	13330	Arg-1 to Met-6, Asn-31 to Ser-37.	S0212: 2		
HMVDA30	691608	3579	40 - 204	13331		S0212: 1 and H0423: 1.		
HMVDF10	970480	3580	3 - 362	13332	Lys-45 to Val-61, Ser-78 to Arg-88.	S0212: 1 and H0581: 1.		



HMVDI66	915638	3581	3 - 104	13333	Leu-1 to Tyr-20.	S0212: 2 and S0002: 1.	
HMVDF83	701907	3582	103 - 285	13334	Met-1 to His-26, Tyr-54 to Phe-60.	S0212: 2	
HMVDG76	861179	3583	1 - 183	13335		S0212: 2	
HMVDH06	934778	3584	34 - 126	13336		S0212: 4, H0580: 1 and L0604: 1.	
HMVDI38	709243	3585	533 - 697	13337		L0748: 5 and S0212: 2.	
HMVDJ75	710475	3586	357 - 557	13338		S0212: 2	
HMVDR49	722581	3587	196 - 381	13339		H0271: 2 and S0212: 1.	
HMVDI07	952488	3588	226 - 462	13340	Pro-53 to Thr-60.	S0212: 2 and L0750: 1.	
HMVDU16	904807	3589	1120 - 1341	13341	Pro-22 to Ser-28, Thr-43 to Lys-74.	AR050: 16, AR051: 2, AR089: 2, AR061: 1, AR054: 1	
HMVDW09	625070	3590	3 - 320	13342	Arg-16 to Leu-22, Pro-60 to Pro-67.	L0748: 4 and S0212: 2. S0212: 2	
HMVDZ70	878247	3591	1 - 873	13343	Arg-1 to Arg-6, Gln-39 to Ile-45, Ser-48 to Tyr-55, Glu-103 to Thr-114, Arg-132 to Ala-150, Glu-167 to Glu-175.	S0212: 2	
HMVEA91	774609	3592	112 - 2	13344	Arg-1 to Tyr-7.	S0212: 2	
HMVEF33	701908	3593	69 - 338	13345	Ile-31 to Glu-37.	S0212: 2	
HMVEH72	750931	3594	2 - 304	13346	Leu-8 to Glu-15, His-23 to Ala-36, Pro-38 to Gly-43, Arg-68 to Asp-76.	S0212: 2	
HMWBE16	527509	3595	140 - 256	13347	Lys-2 to Tyr-10.	H0341: 2	
HMWBG29	890878	3596	105 - 263	13348	Pro-4 to Ser-9.	H0341: 2, L0606: 1, H0521: 1 and L0748: 1.	
HMWBI47	527593	3597	80 - 340	13349	Gly-19 to Gly-26.	H0341: 4	107280, 107280, 107400, 107400, 122500, 186960, 245200, 601841
HMWBIK07	954098	3598	3 - 56	13350	Thr-11 to Lys-18.	H0341: 2	

HMWBK24	524357	3599	3 - 161	13351	Pro-3 to Ala-14.	H0341: 1 and S0053: 1.	
HMWBM09	967687	3600	2 - 124	13352	Lys-18 to Ser-23, Gly-28 to Ile-37.	H0341: 2	
HMWBN56	745698	3601	2 - 289	13353	Gly-43 to Pro-51.	H0341: 1 and S0278: 1.	
HMWBO07	839560	3602	44 - 250	13354	Ser-19 to Glu-26, His-63 to Tyr-69.	H0341: 2	
HMWBR86	731650	3603	61 - 192	13355		H0556: 1 and H0341: 1.	126650, 126650, 150240, 154276, 173360, 173360, 180105, 222800, 246900, 602136, 602136, 602136, 602447
HMWBV45	861152	3604	150 - 317	13356		H0341: 3	
HMWCG29	723779	3605	86 - 226	13357		H0341: 2	
HMWCQ09	924634	3606	48 - 338	13358	Pro-7 to Gly-21, Ser-57 to Lys-63, Ser-91 to Glu-97.	H0341: 1, H0402: 1 and H0069: 1.	
HMWCO58	738372	3607	3 - 125	13359		H0341: 1 and H0521: 1.	
HMWCV08	960083	3608	2 - 301	13360	Ala-37 to Arg-48.	H0341: 1 and S0002: 1.	
HMWCX60	531395	3609	3 - 104	13361	Tyr-27 to Cys-32.	H0341: 2	
HMWDD54	932261	3610	80 - 457	13362		H0341: 2	
HMWDD75	800023	3611	2 - 184	13363		H0341: 1 and H0090: 1.	
HMWDF88	906769	3612	147 - 362	13364	Trp-14 to Asp-27.	AR061: 207, AR089: 155 H0341: 1 and H0083: 1.	
HMWDH23	676216	3613	2 - 142	13365		H0341: 2	
HMWDL52	921603	3614	10 - 327	13366	Pro-37 to Phe-51, Arg-63 to Leu-68, Arg-71 to Ser-77.	H0341: 2	
HMWDQ83	558021	3615	119 - 289	13367	Lys-1 to Asp-14.	H0341: 2	
HMWDW60	712083	3616	1 - 315	13368	Pro-16 to Leu-23, His-26 to His-31, Pro-34 to Thr-50, Pro-53 to Ala-68, Lys-71 to Ser-79, Asn-84 to Gly-90.	H0341: 1 and H0486: 1.	

HMWDY93	573513	3617	168 - 332	13369		H0341: 2	
HMWDZ73	573754	3618	121 - 234	13370		H0341: 1 and H0318: 1.	
HMWDZ77	573494	3619	1 - 138	13371	Asp-9 to Gly-15, Ser-34 to His-42.	H0341: 2 and L0542: 1.	
HMWEE04	709334	3620	3 - 326	13372		H0341: 2	
HMWEE24	781017	3621	317 - 478	13373	His-1 to Lys-13, Glu-19 to Lys-40, Glu-42 to Ala-65, Pro-71 to Thr-92.	H0341: 1 and H0318: 1.	
HMWE73	767384	3622	3 - 374	13374		H0341: 2	
HMWEK11	967362	3623	561 - 824	13375	Gly-26 to Ser-34.	H0271: 2, H0341: 1 and L0438: 1.	
HMWEK39	573604	3624	81 - 248	13376	Arg-1 to Gly-6.	H0341: 2	
HMWEM85	783973	3625	179 - 322	13377		H0341: 2	
HMWEF07	953749	3626	1 - 819	13378		L0747: 2, H0341: 1, H0543: 1 and H0423: 1.	
HMWES31	861129	3627	89 - 316	13379		H0341: 2	
HMWFC21	752826	3628	2 - 376	13380	Gly-1 to Tyr-18, Pro-20 to Trp-26, Leu-31 to Met-39, Arg-63 to Leu-75.	H0341: 2 and H0543: 1.	
HMWFE01	917150	3629	1 - 135	13381	Trp-3 to Ser-9.	H0341: 2	
HMWFH47	738220	3630	36 - 485	13382		H0341: 1, T0041: 1 and L0748: 1.	
HMWFI54	573598	3631	38 - 274	13383	Ser-29 to Trp-35.	H0341: 2	
HMWFO10	954979	3632	1 - 189	13384		H0556: 1 and H0341: 1.	
HMWFP33	702618	3633	1 - 213	13385		H0341: 2 and L0803: 1.	
HMWFP60	576880	3634	134 - 325	13386	Asn-4 to Val-10.	H0341: 1 and S0033: 1.	
HMWFQ91	573551	3635	3 - 263	13387	Lys-1 to Lys-6.	H0341: 2	
HMWFR11	967371	3636	127 - 2	13388		H0341: 1 and H0543: 1.	
HMWFO05	861119	3637	106 - 312	13389		H0341: 1 and H0306: 1.	
HMWFO85	659578	3638	299 - 418	13390	Phe-3 to Gly-10.	H0591: 3, H0543: 2, H0341: 1, L0657: 1 and L0759: 1.	
HMWFW75	727236	3639	2 - 112	13391		H0341: 1 and H0423: 1.	
HMWGC08	959838	3640	110 - 262	13392		H0341: 2	

HMWGF22	861104	3641	27 - 311	13393	Gln-2 to Tyr-28.	H0341: 3	H0341: 2	12q13	107777, 123940, 139550, 139350, 148040, 148041, 148043, 148070, 231550, 600194, 600231, 600536, 600808, 600956, 601284, 601769, 601769, 601928, 602116, 602153
HMWGG55	920575	3642	2 - 172	13394					
HMWGR95	576885	3643	109 - 255	13395	Pro-12 to Thr-20.	H0341: 2			
HMWGR98	575822	3644	207 - 365	13396	Pro-16 to Pro-32, Asp-39 to His-44.	L0748: 3, L0754: 2, H0341: 1 and H0402: 1.			
HMWGT07	953454	3645	2 - 520	13397	Arg-9 to Trp-16.	H0341: 1 and H0090: 1.			
HMWGT04	823460	3646	227 - 427	13398	Trp-31 to Arg-37, Gly-46 to His-52.	H0341: 2		9p13	230400, 250250
HMWGV63	576854	3647	2 - 130	13399		H0341: 2			
HMWGX38	709249	3648	89 - 256	13400	Trp-1 to Ser-8, Ile-21 to Leu-32, Ala-46 to Lys-56.	H0341: 2		1q21-q22	104770, 107670, 110700, 135940, 145001, 146790, 152445, 152445, 159001, 159440, 159440, 159440, 174000, 179755, 182860, 182860, 182860, 186780, 191030, 191315, 230800, 230800, 266200, 600897, 600923, 601105, 601412, 601652, 602491
HMWGX50	959293	3649	311 - 745	13401		H0341: 2			
HMWH9A1	684346	3650	104 - 247	13402		H0341: 2			
HMWHB03	861108	3651	189 - 374	13403	Ave-9 to Ser-14.	H0341: 2			

HMWHF58	584538	3652	248 - 418	13404		H0341: 2		
HMWHM30	676413	3653	106 - 333	13405		H0341: 1 and H0272: 1.		
HMWHN70	851334	3654	22 - 354	13406	Ala-12 to Ser-19, His-44 to Tyr-53, Leu-74 to Glu-88.	H0341: 3		
HMWHS25	678166	3655	25 - 321	13407	Thr-51 to Glu-60, Ser-65 to Asn-75.	H0265: 1 and H0341: 1.		
HMWHZ50	724431	3656	281 - 508	13408		H0341: 2		
HMWIA18	424132	3657	1 - 225	13409		H0341: 1 and H0521: 1.		
HMWIF10	964707	3658	345 - 82	13410	Ser-1 to Ala-6, Lys-12 to Gly-17, Cys-25 to Ile-33.	H0305: 2, L0749: 2, H0341: 1 and L0759: 1.		
HMWIL67	791275	3659	2 - 253	13411	Cys-5 to Gly-19, Thr-28 to Leu-35, Ala-37 to Lys-44.	L0745: 3, H0341: 1, L0746: 1 and H0444: 1.		
HMWIM26	681845	3660	127 - 249	13412		H0341: 2		
HMWIO47	653198	3661	86 - 325	13413	Ser-49 to Gln-54.	H0341: 2 and S0052: 1.		
HMWIS96	746475	3662	420 - 692	13414	Gly-16 to Gly-27.	H0556: 3 and H0341: 1.		
HMWIT95	793450	3663	3 - 413	13415	Leu-7 to Gly-13, Leu-35 to Val-41, Ala-52 to Gln-66, Glu-72 to Leu-87, Trp-125 to Asp-130.	H0341: 1 and H0402: 1.	15q22	102578, 109700, 151670, 154550, 601780
HMWITU48	917690	3664	2 - 451	13416	Ala-1 to Ile-11, Gly-27 to Gly-33, Arg-40 to Arg-47, Pro-76 to Trp-81, Arg-121 to Gly-126, Gly-129 to Cys-138, Gln-141 to Phe-148.	H0341: 1, H0264: 1 and L0748: 1.	1q21	104770, 107670, 110700, 135940, 145001, 146790, 152445, 152445, 159001, 174000, 179755, 182860, 182860, 182860, 191315, 230800, 230800, 266200, 600897, 601105, 601412, 601652, 602491
HMWIV48	795649	3665	40 - 171	13417		H0341: 1, H0306: 1 and		

HMWIX21	670972	3666	82 - 213	13418	Ser-1 to Phe-11, Gln-32 to Arg-37.	H0580: 1, H0341: 1, H0090: 1 and L0779: 1.	
HMWIZ03	924227	3667	79 - 264	13419	Pro-35 to Pro-40, Ser-51 to Leu-61.	H0341: 1, H0264: 1 and S0002: 1.	
HMWJB29	668700	3668	137 - 352	13420		H0341: 2	
HMWJC76	688926	3669	99 - 287	13421		H0341: 2	
HMWJF10	964705	3670	3 - 353	13422	Pro-7 to Ala-14, Pro-34 to Gly-39.	H0341: 2	
HMWJG85	918724	3671	2 - 424	13423	Ala-1 to Gly-8, Thr-11 to Gly-18, Asp-23 to Asn-30.	H0341: 1, H0609: 1, H0271: 1, H0521: 1 and L0581: 1.	124200, 147440, 160781, 181405, 235800, 261600, 261600, 600175, 601406, 601620, 601621
HMWJH15	757807	3672	106 - 204	13424		H0341: 2	
HMXAA03	964494	3673	1 - 72	13425		H0552: 2	
HMXAA08	959267	3674	11 - 172	13426	Pro-26 to Ser-36.	H0552: 4	
HMXAA39	670501	3675	42 - 224	13427	Arg-21 to Arg-37.	H0552: 4, L0761: 3, H0583: 2, H0556: 1, H0650: 1, L0785: 1, S0002: 1, L0655: 1, H0445: 1 and H0543: 1.	
HMXAA56	733331	3676	3 - 56	13428		H0552: 5	
HMXAB21	714384	3677	2 - 97	13429		H0552: 4	
HMXAB69	661849	3678	1 - 150	13430		H0552: 6	
HMXAC70	964492	3679	5 - 151	13431		H0552: 12	
HMXAC83	780385	3680	1 - 117	13432	Pro-8 to His-21.	AR054: 5, AR051: 2, AR050: 1 H0552: 4	
HNEAB76	674781	3681	73 - 174	13433		H0179: 1, H0063: 1 and S0426: 1.	
HNEAC51	523767	3682	3 - 272	13434	Pro-74 to Gly-79.	H0179: 3, L0749: 2 and L0791: 1.	
HNEAJ21	671370	3683	21 - 125	13435	Leu-1 to Lys-10.	H0179: 1 and H0542: 1.	
HNEAJ57	735083	3684	106 - 258	13436		H0486: 1 and H0179: 1.	
HNEAK41	711557	3685	72 - 239	13437	Lys-6 to Asn-12.	H0179: 1 and S0002: 1.	

HNEAN61	507302	3686	3 - 173	13438	Lys-15 to Thr-26.	H0179: 1 and S0002: 1.	
HNEAN85	524222	3687	148 - 300	13439	Gln-26 to Gln-42.	H0305: 2, H0306: 1, H0402: 1, H0380: 1, H0179: 1, S0052: 1, S0428: 1, S0053: 1, S0031: 1 and H0444: 1.	
HNEB166	529168	3688	3 - 263	13440	Gly-4 to Gly-11.	H0179: 1 and H0087: 1.	
HNEBJ08	958742	3689	192 - 410	13441		AR031: 76, AR054: 73, AR050: 42, S0218: 1, H0179: 1 and S0428: 1.	
HNEBJ35	529576	3690	60 - 182	13442	Ile-3 to Gly-8.	H0179: 1 and H0543: 1.	
HNEBJ48	919274	3691	380 - 529	13443	Glu-1 to Arg-11, Pro-13 to Gly-22.	H0179: 1 and H0445: 1.	
HNEBM07	954173	3692	1 - 171	13444	Gly-1 to Pro-9.	H0075: 1 and H0179: 1.	
HNEBY19	527894	3693	142 - 294	13445		H0179: 2	
HNEBY26	527891	3694	62 - 331	13446		H0179: 2	
HNEBY30	523571	3695	99 - 254	13447	Ile-6 to Gln-24, Thr-31 to Asp-52.	H0179: 2	
HNEBY32	527889	3696	178 - 339	13448		H0179: 2	
HNEBY34	507211	3697	2 - 316	13449		H0179: 2	
HNEBY44	773793	3698	72 - 227	13450		H0179: 2	
HNEBY46	527887	3699	252 - 386	13451	Gln-3 to Ser-9, Cys-18 to Trp-27, Pro-34 to Pro-39.	H0179: 2	
HNEBY48	527895	3700	68 - 322	13452		H0179: 2	
HNEBY71	527883	3701	1 - 258	13453	Gly-1 to Ser-9, Ser-18 to Gln-23.	H0179: 2	
HNECD65	861062	3702	27 - 308	13454	Asp-1 to Gly-7.	S0114: 1 and H0179: 1.	
HNECE07	954094	3703	84 - 212	13455		L0774: 2, H0402: 1 and H0179: 1.	
HNECE14	927590	3704	2 - 106	13456		H0179: 1 and H0264: 1.	
HNECF59	507208	3705	1 - 114	13457	Lys-10 to Val-17.	H0179: 2	
HNECF76	506532	3706	52 - 288	13458		H0179: 1 and H0063: 1.	
HNECI57	529873	3707	1 - 168	13459		H0179: 1 and H0271: 1.	
HNECK47	720588	3708	13 - 174	13460		H0486: 1 and H0179: 1.	

HNECK66	932501	3709	1 - 228	13461	Arg-16 to Val-24, Pro-27 to Arg-34, Glu-37 to Leu-42.	S0114: 1 and H0179: 1.	
HNECK67	527100	3710	270 - 410	13462		S0052: 2, H0179: 1 and L0375: 1.	
HNECK83	935045	3711	18 - 332	13463	Ser-16 to Gly-22, Arg-37 to His-45, Val-56 to Arg-64.	H0585: 10, H0141: 2, H0556: 1, H0656: 1 and H0179: 1.	
HNECL71	527810	3712	65 - 235	13464		H0179: 2	
HNECM64	861031	3713	2 - 274	13465	Ala-1 to Ser-8.	H0179: 2	
HNECO69	861068	3714	24 - 137	13466		H0179: 2	
HNECR93	529868	3715	3 - 299	13467		H0271: 2 and H0179: 1.	
HNECS77	527511	3716	326 - 490	13468	Trp-37 to Glu-43.	H0436: 2, S0114: 1 and H0179: 1.	
HNECT70	958356	3717	2 - 193	13469		H0179: 1 and S0428: 1.	
HNECV31	466977	3718	53 - 304	13470	Pro-10 to Glu-15.	H0179: 2 and H0521: 1.	
HNECV66	575633	3719	151 - 336	13471		H0179: 2 and H0271: 1.	
HNECW09	968378	3720	61 - 189	13472		H0179: 2	
HNECW20	527508	3721	200 - 505	13473		H0179: 2	
HNECW35	855430	3722	1 - 423	13474	Pro-6 to Met-11.	H0179: 3, S0114: 1 and H0581: 1.	
HNECX77	507305	3723	88 - 363	13475	Val-21 to Pro-39, Thr-57 to Ser-64, Pro-83 to Glu-92.	H0179: 1 and H0271: 1.	164731, 172400, 172400, 180901, 180901, 221770, 248600, 600918, 602716
HNEDD27	527589	3724	189 - 389	13476		H0179: 2	
HNEDD80	507186	3725	49 - 336	13477		H0179: 2	
HNEDD90	789187	3726	307 - 173	13478	Asp-38 to Met-44.	H0255: 1 and H0179: 1.	
HNEDE48	721895	3727	78 - 263	13479		H0580: 1 and H0179: 1.	
HNEDE59	527060	3728	10 - 276	13480	Ser-5 to Phe-18, Asp-28 to Glu-43.	H0179: 3	
HNEDE71	572390	3729	33 - 134	13481		H0421: 1 and H0179: 1.	
HNEDEG11	967643	3730	94 - 219	13482	Ser-5 to Gly-19.	H0265: 1 and H0179: 1.	
HNEDEG35	790570	3731	27 - 233	13483		H0421: 1 and H0179: 1.	



HNEDG56	746708	3732	163 - 339	13484	Leu-13 to Gly-20.	H0179: 2	
HNEDH54	527503	3733	56 - 289	13485	Cys-18 to Cys-24.	H0179: 1 and H0271: 1.	
HNEDH96	697747	3734	436 - 573	13486		H0179: 1 and H0444: 1.	
HNEDI80	573138	3735	117 - 365	13487	Arg-40 to Thr-47.	H0179: 2	
HNEDK04	923910	3736	1 - 153	13488		H0179: 2 and H0271: 1.	
HNEDK16	702570	3737	3 - 446	13489	His-1 to Trp-8, Ala-31 to Leu-37, Pro-39 to Pro-50, Ser-54 to Ser-73.	AR051: 13, AR054: 10, AR050: 2 H0179: 2 and H0271: 1.	
HNEDK22	527503	3738	192 - 377	13490		S0114: 1 and H0179: 1.	
HNEDK74	765880	3739	84 - 203	13491		H0657: 1, H0179: 1 and H0264: 1.	
HNEDN42	527499	3740	1 - 192	13492	Gly-27 to Lys-32, Ser-45 to Pro-53.	H0179: 2	
HNEDO95	573136	3741	57 - 233	13493	Pro-34 to Pro-45.	H0179: 2	
HNEDQ51	527816	3742	32 - 196	13494		H0179: 2	
HNEDQ68	586485	3743	764 - 925	13495		AR050: 7, AR054: 3, AR051: 1 H0542: 2, H0318: 1, H0179: 1 and L0527: 1.	
HNEDR48	683470	3744	35 - 166	13496	Gln-36 to Gly-41.	H0402: 1 and H0179: 1.	
HNEDS03	925091	3745	1 - 126	13497	Leu-7 to Gly-12.	H0179: 2	
HNEDS18	954586	3746	153 - 4	13498	Arg-1 to Arg-7.	H0179: 3	
HNEDS29	703032	3747	1 - 147	13499		H0580: 1 and H0179: 1.	
HNEDU01	909832	3748	156 - 416	13500		H0179: 1 and S0002: 1.	
HNEEA41	868102	3749	1 - 189	13501		H0263: 1, H0650: 1 and H0179: 1.	
HNEEB62	573185	3750	149 - 295	13502	Met-17 to Trp-26.	H0179: 2	
HNEEB84	781940	3751	1 - 225	13503		H0179: 1 and H0521: 1.	
HNEEC81	844318	3752	108 - 320	13504		H0179: 2	
HNEDJ12	893698	3753	403 - 531	13505	Ser-34 to Gln-43.	H0179: 1 and S0428: 1.	
HNEDD48	668747	3754	329 - 577	13506	Ser-14 to Ile-21.	L0748: 2, H0556: 1, H0457: 1, H0179: 1 and L0455: 1.	
HNFAA13	667712	3755	203 - 472	13507	Glu-6 to Gly-24, Cys-35 to His-46.	H0271: 1 and H0436: 1.	

HNFAA80	781578	3756	100 - 288	13508	Phe-11 to Gln-20.	H0318: 1, H0271: 1 and H0444: 1.
HNFAA83	530295	3757	34 - 135	13509	His-1 to Gln-7.	H0271: 2
HNFAA95	784714	3758	374 - 739	13510		L0746: 3, H0436: 2, L0745: 2 and H0271: 1.
HNFAE07	861069	3759	2 - 136	13511		H0179: 1 and H0271: 1.
HNFAF40	861021	3760	2 - 208	13512	Pro-19 to Leu-27.	H0271: 2
HNFAF69	530349	3761	2 - 175	13513	Pro-4 to Arg-16, Tyr-36 to Asn-42.	H0271: 2
HNFAH45	662053	3762	33 - 308	13514	Lys-1 to Val-7.	H0271: 2
HNFBBS1	530064	3763	96 - 218	13515	Ser-32 to Pro-39.	H0271: 2
HNFBT11	967784	3764	8 - 232	13516		H0271: 2
HNFBUS3	861015	3765	100 - 360	13517		H0255: 1 and H0271: 1.
HNFCI32	699706	3766	3 - 137	13518		H0271: 1 and H0271: 1.
HNFCI41	861014	3767	271 - 546	13519	Glu-2 to Pro-9.	S0474: 1 and H0271: 1.
HNFCI77	761390	3768	171 - 440	13520	Asn-10 to His-16.	H0271: 1 and H0444: 1.
HNFCCL68	585328	3769	2 - 121	13521	Pro-1 to Leu-16.	H0271: 2
HNFC804	927836	3770	64 - 297	13522		L0766: 3, H0271: 1, S0052: 1, L0779: 1 and L0731: 1.
HNFCI27	529964	3771	3 - 185	13523	Ala-6 to Lys-11.	H0271: 2
HNFCI67	927833	3772	119 - 229	13524		H0271: 2
HNFCW14	955293	3773	2 - 193	13525		H0179: 1, H0271: 1 and S0002: 1.
HNFCY33	861005	3774	168 - 401	13526		H0486: 1 and H0271: 1.
HNFD021	529867	3775	166 - 312	13527		H0271: 2
HNFD091	496241	3776	7 - 294	13528	Gly-61 to Gly-68.	H0271: 1 and S0053: 1.
HNFDI17	960239	3777	1 - 201	13529		H0271: 2 and L0600: 2.
HNFDK40	854017	3778	315 - 488	13530		H0179: 1, H0271: 1 and H0444: 1.
HNFDN04	537317	3779	232 - 426	13531	His-42 to Asn-49.	L0740: 2, H0271: 1 and H0264: 1.
HNFDN41	712571	3780	212 - 388	13532	Leu-10 to Asp-15, Glu-27 to Lys-33.	H0271: 3 and H0264: 1.
HNFDN89	787085	3781	1 - 186	13533		H0271: 1 and H0264: 1.
HNFD081	537341	3782	119 - 244	13534		H0271: 2

HNFD084	575347	3783	126 - 437	13535		H0271: 2
HNFD099	719215	3784	2 - 265	13536		H0271: 1 and S0052: 1.
HNFD035	527500	3785	72 - 221	13537		H0179: 1, H0271: 1 and L0667: 1.
HNFD083	537343	3786	93 - 278	13538		H0271: 2
HNFDV41	537337	3787	1 - 201	13539	Gly-1 to Val-9, Gln-19 to Gln-28, Leu-33 to Gly-38, His-46 to Arg-56.	H0271: 2
HNFD022	537334	3788	1 - 93	13540	Pro-13 to Ser-18.	H0271: 2
HNFD043	583458	3789	13 - 336	13541	Arg-54 to Pro-64.	L0794: 2, L0805: 2, L0789: 2, H0271: 1, L0803: 1, L0774: 1, L0776: 1, S0053: 1 and L0589: 1.
HNFE043	583459	9579	581 - 441	19331	Arg-21 to Arg-30.	H0271: 3
HNFE043	424792	3790	188 - 343	13542	Leu-13 to Gly-18, Glu-29 to Trp-34.	
HNFE083	850982	3791	190 - 516	13543	Pro-1 to Ala-7, Leu-26 to Ser-35.	AR051: 12, AR054: 1, AR050: 1, H0580: 3, H0254: 2, H0521: 2, H0656: 1, H0457: 1, H0271: 1 and H0488: 1.
HNFE095	971171	3792	227 - 469	13544	Lys-19 to Tyr-29, Ser-36 to Val-67.	H0271: 1 and S0052: 1.
HNFE009	526641	3793	154 - 261	13545		H0179: 1 and H0271: 1.
HNFE031	934595	3794	242 - 346	13546		H0271: 1, L0766: 1 and H0522: 1.
HNFEH12	825406	3795	1 - 147	13547	Asp-29 to Cys-36.	H0271: 2
HNFEI12	518245	3796	19 - 108	13548	Ala-14 to Ser-29.	H0271: 2
HNFEK33	957396	3797	1 - 267	13549		H0637: 1 and H0271: 1.
HNFEI61	971651	9580	911 - 759	19332	His-41 to Leu-51.	
HNFEW76	860967	3798	136 - 375	13550		S0052: 3, H0271: 1 and H0521: 1.
HNFEH86	537336	3799	91 - 243	13551		H0271: 2
HNFEW20	669916	3800	15 - 389	13552	Ser-2 to Gln-10, Gly-12 to Gly-17.	H0271: 1 and S0053: 1.

HNFE061	530355	3801	2 - 148	13553			
HNFER89	787086	3802	152 - 370	13554	Gly-9 to Ser-28.	H0271: 2	
HNFE844	860920	3803	2 - 274	13555	Pro-42 to Asp-47.	H0271: 1 and S0428: 1.	
HNFEU62	574398	3804	1 - 87	13556		H0271: 2	
HNFEV41	575549	3805	1 - 87	13557		H0271: 2, L0768: 1 and L0794: 1.	
HNFEV66	575552	3806	1 - 111	13558	Gly-6 to Arg-11.	H0271: 2	
HNFFB21	671263	3807	134 - 439	13559		H0271: 1 and S0144: 1.	
HNFFC21	574693	3808	281 - 415	13560	Arg-4 to Ala-14.	H0271: 2 and H0556: 1.	
HNFFD88	577422	3809	59 - 220	13561	Asp-11 to Glu-17.	H0271: 1 and H0416: 1.	
					Lys-24 to Gly-32.		
HNFFF81	574678	3810	2 - 67	13562		H0271: 2	
HNFFG79	781693	3811	1 - 192	13563	Lys-12 to Val-17.	H0271: 2	
HNFFH03	921923	3812	45 - 185	13564	Gly-7 to Glu-16.	L0439: 4, H0402: 1, H0271: 1, L0438: 1 and H0444: 1.	
					Asp-34 to Glu-39.		
HNFFH04	574679	3813	10 - 174	13565	Lys-14 to Asp-24.	H0271: 1 and S0428: 1.	
HNFFJ48	860311	3814	2 - 238	13566		H0271: 2	
HNFFK15	920748	3815	29 - 202	13567			
HNFFK36	529978	3816	3 - 239	13568			
HNFFK61	740644	3817	118 - 315	13569	Ala-1 to Lys-8.	H0271: 2	
					Gly-32 to Gly-37.	H0271: 3 and L0766: 1.	
HNFFM25	705856	3818	481 - 738	13570	Glu-6 to Val-14.	H0271: 2 and L0596: 1.	6
HNFFO61	742049	3819	20 - 343	13571		H0581: 1 and H0271: 1.	
HNFFO76	727306	3820	60 - 200	13572	Glu-3 to Pro-15.	H0271: 1 and S0002: 1.	
					Leu-19 to Ser-26.		
HNFFR05	860851	3821	137 - 397	13573	Asp-38 to Arg-54.	H0271: 2	
HNFFR46	574618	3822	1 - 162	13574		H0271: 2	
HNFFS14	558192	3823	69 - 236	13575		H0271: 3	
HNFFS23	574677	3824	102 - 233	13576		H0271: 2	
HNFFS46	574669	3825	41 - 169	13577		H0271: 2	
HNFFS96	860904	3826	1 - 102	13578	Ser-14 to Gly-21.	H0271: 2	
HNFFT30	574616	3827	3 - 242	13579		H0271: 2	
HNFFT62	574623	3828	189 - 404	13580		H0271: 2	
HNFFT71	574617	3829	2 - 187	13581	Ala-1 to Arg-6.	H0271: 2	
HNFFT83	506711	3830	2 - 424	13582	Val-31 to Tyr-66.	H0271: 2	

HNFFV05	932364	3831	112 - 264	13583	Gly-68 to Leu-73.	H0271: 3	
HNFFV66	574153	3832	200 - 322	13584	Met-11 to Val-16.	H0271: 2	
HNFFV73	574143	3833	94 - 267	13585		H0402: 1 and H0271: 1.	
HNFFX21	574217	3834	190 - 321	13586	Ser-1 to Asp-11, Leu-13 to Gly-25.		
HNFFX55	574218	3835	195 - 461	13587	Asn-1 to Trp-7, Ala-14 to Pro-19, Val-30 to Ser-35.	H0271: 2	
HNFFX79	574152	3836	1 - 219	13588		H0271: 2	
HNFFZ53	526845	3837	75 - 245	13589		H0271: 3	
HNFFZ89	913701	3838	256 - 534	13590	Lys-1 to Glu-7, Asn-9 to Phe-14, Asn-71 to Ile-80.	H0271: 1, H0416: 1, L0758: 1 and H0543: 1.	
HNFFZ91	860897	3839	59 - 235	13591	Lys-1 to Ile-13, Ser-21 to Arg-27.	AR050: 34, AR051: 30, AR054: 28 H0179: 1, H0271: 1, S0428: 1 and H0543: 1.	
HNFGB37	577342	3840	2 - 100	13592	Val-3 to Ser-13.	H0271: 1 and H0416: 1.	
HNFGC17	860899	3841	23 - 361	13593	Leu-35 to Ile-44, Tyr-57 to His-65, Ala-67 to Asn-72.	H0179: 1, H0271: 1, H0264: 1 and S0052: 1.	
HNFGC46	967538	3842	37 - 189	13594		H0271: 2	
HNFGC53	860900	3843	2 - 241	13595	Gly-40 to Glu-45.	H0271: 2 and L0749: 1.	
HNFGC57	782183	3844	249 - 434	13596	Asn-20 to Asp-26, Asn-34 to Ser-41.	H0271: 2, H0265: 1 and H0556: 1.	
HNFGC64	851981	3845	96 - 350	13597		H0486: 1 and H0271: 1.	
HNFGB16	781720	3846	1 - 129	13598	Glu-8 to Gly-17.	H0179: 1 and H0271: 1.	
HNFGC36	684992	3847	3 - 140	13599		H0271: 2 and L0581: 1.	
HNFGF83	526843	3848	3 - 140	13600		H0271: 2, H0581: 1 and H0543: 1.	
HNFGH24	524419	3849	178 - 324	13601		H0271: 1 and H0187: 1.	
HNFGH71	954601	3850	230 - 379	13602		H0179: 1 and H0271: 1.	
HNFGI01	921431	3851	2 - 481	13603	Glu-6 to Leu-23.	H0271: 2, L0761: 1, L0752: 1, L0755: 1 and L0596: 1.	
HNFGI49	909707	3852	3 - 299	13604	Arg-29 to Arg-34.	H0271: 2	

HNFGI84	783204	3853	2 - 130	13605				
HNFGI93	526334	3854	2 - 199	13606	Glu-3 to Cys-21.		H0271: 2	
HNFGK28	574599	3855	158 - 334	13607	Glu-1 to Asn-10, Asn-29 to Lys-34, Asn-43 to Gly-48.		H0271: 2	
HNFGK29	574593	3856	41 - 235	13608			H0271: 2	
HNFGK39	574592	3857	1 - 237	13609	Ser-1 to Phe-6, Pro-22 to Arg-27, Glu-31 to Glu-36, Ser-42 to Arg-48.		H0271: 2	
HNFGI31	420241	3858	23 - 445	13610			H0402: 1 and H0271: 1.	
HNFGI94	709564	3859	1 - 150	13611	His-6 to Arg-12.		H0271: 2	
HNFGM40	524398	3860	127 - 357	13612	Pro-5 to Cys-11, Ser-25 to Ala-31, Pro-39 to Lys-44.		H0271: 2	
HNFGM61	750800	3861	3 - 170	13613	Ala-2 to Trp-7, Thr-10 to Leu-26.		H0271: 2	104770, 107300, 107670, 110700, 131210, 135940, 136132, 145001, 146790, 150292, 152445, 152445, 159001, 173610, 174000, 179755, 182860, 182860, 182860, 191315, 208250, 230800, 230800, 233710, 266200, 600897, 600995, 601105, 601412, 601518, 601652, 602491
HNFGM76	908665	3862	1 - 507	13614	Ala-2 to Pro-8, Glu-13 to Pro-20, Glu-30 to His-51, Val-58 to His-64, Thr-71 to Arg-76.		AR089: 8, AR061: 6 L0761: 3, H0457: 2, L0769: 2, L0800: 2, L0794: 2, H0580: 1, H0271: 1, L0796: 1, L0803: 1, L0789: 1.	

HNFGN36	575567	3863	67 - 327	13615	Ser-81 to Glu-94, Thr-101 to Phe-108, Arg-119 to His-126, Gln-139 to Gly-148, Ser-151 to Ser-159, Thr-12 to His-29.	L0792: 1, L0777: 1 and L0731: 1.	
HNFGN60	574588	3864	56 - 334	13616		H0271: 3, L0766: 1, S0052: 1 and L0591: 1.	
HNFGP07	953915	3865	302 - 517	13617	Thr-42 to Pro-49.	H0271: 2	
HNFGP31	574643	3866	42 - 125	13618		H0271: 1 and H0542: 1.	
HNFGP64	932413	3867	84 - 230	13619		H0271: 1 and H0264: 1.	
HNFGQ23	750597	3868	213 - 383	13620	Thr-22 to Phe-28.	L0766: 3, H0271: 2, H0306: 1 and H0402: 1.	
HNFGQ58	574583	3869	180 - 314	13621	Leu-1 to Ile-8.	H0580: 1 and H0271: 1.	
HNFGU56	574587	3870	3 - 305	13622	Asn-3 to Ser-9, Ala-21 to Trp-29, Ser-51 to Trp-56, Arg-63 to Arg-68, Ile-89 to Pro-94.	H0271: 2	
HNFGW96	915309	3871	430 - 693	13623	Gln-10 to Tyr-17, Arg-19 to Gln-30, Lys-48 to Ala-54.	H0416: 2, L0439: 2, H0271: 1 and L0776: 1.	
HNFGX55	795918	3872	344 - 721	13624		H0271: 4, H0179: 1 and L0748: 1.	229600, 264300, 600542, 602014, 602088
HNFGZ03	924695	3873	317 - 493	13625		H0271: 1 and S0052: 1.	19q13
HNFHA11	967520	3874	1 - 360	13626		AK089: 11, AR061: 8 H0271: 2	600652, 600757
HNFDH40	970875	3875	327 - 482	13627		H0271: 2 and H0444: 1.	
HNFFH18	666827	3876	313 - 191	13628	Leu-1 to Ser-8.	H0271: 2	
HNFFH32	699518	3877	3 - 323	13629	Ser-6 to Leu-12.	H0271: 2	
HNFFH33	574146	3878	153 - 314	13630		H0271: 2	
HNFFH53	574148	3879	170 - 322	13631	Arg-1 to Ser-7, Glu-9 to Asn-16.	H0271: 2	
HNFFHG35	574684	3880	23 - 205	13632		H0271: 2	

HNFFH112	968808	3881	84 - 182	13633	Arg-2 to Asn-14.	H0271: 2	
HNFFH31	574697	3882	34 - 213	13634		H0271: 1 and H0090: 1.	
HNFFH33	574703	3883	180 - 362	13635		H0271: 1 and H0090: 1.	
HNFFH83	523646	3884	38 - 181	13636		H0271: 2	
HNFFH88	521932	3885	36 - 128	13637		H0179: 1 and H0271: 1.	19q13.3-q13.4 113900, 126340, 126391, 130410, 134790, 138570, 160900, 173850, 191044, 258501, 600040, 600138, 602225, 602225
HNFFH17	523569	3886	33 - 203	13638	Asn-4 to Gly-17.	H0271: 3	
HNFFH10	964802	3887	149 - 352	13639	His-10 to Ser-24, Gln-32 to Phe-55.	H0271: 3	19q13 109560, 205900, 600652, 600757
HNFFH07	953538	3888	11 - 208	13640	Ser-8 to Ile-16.	H0179: 1 and H0271: 1.	
HNFFH46	860844	3889	3 - 446	13641	His-1 to Asn-8, Ser-15 to Gln-22, Leu-27 to Arg-32.	H0271: 3	
HNFFH77	576186	3890	165 - 422	13642	Pro-38 to Lys-43.	AR061: 1, AR089: 0 H0271: 2	
HNFFH85	577324	3891	114 - 311	13643	Lys-1 to Gly-23.	S0428: 2, H0271: 1, L0770: 1, L0666: 1 and S0053: 1.	
HNFFH09	657247	3892	3 - 131	13644	Pro-6 to Gly-11.	H0271: 1, S0002: 1 and S0052: 1.	
HNFFH47	916624	3893	40 - 360	13645		L0771: 2, H0556: 1, H0657: 1, S0116: 1, H0402: 1, H0580: 1, S0278: 1, H0179: 1, H0271: 1, S0002: 1, L0752: 1 and S0196: 1. H0556: 1 and H0271: 1.	
HNFFH58	674349	3894	3 - 134	13646		H0583: 1 and H0271: 1.	
HNFFH60	662643	3895	7 - 87	13647		H0271: 2	
HNFFH03	800887	3896	165 - 272	13648			
HNFFH01	938114	3897	173 - 334	13649	Glu-1 to Trp-8.	H0271: 2 and S0428: 1.	
HNFFH23	921950	3898	41 - 322	13650	Arg-60 to Lys-65.	H0271: 1, H0416: 1 and H0521: 1.	
HNFFH32	765827	3899	111 - 323	13651	Pro-34 to Ser-44.	H0271: 2 and H0090: 1.	



HNFH067	576147	3900	1 - 240	13652	Thr-59 to Arg-73.	H0271: 2	
HNFRH70	586494	3901	63 - 344	13653	Leu-10 to Gln-19.	H0271: 3 and H0179: 1.	
HNFRH84	725666	3902	171 - 383	13654	Asp-13 to Pro-27.	H0271: 1 and H0416: 1.	
HNFRH85	576118	3903	1 - 195	13655	His-6 to Val-11.	H0271: 1 and H0416: 1.	
HNFRH20	512927	3904	310 - 471	13656		H0271: 2	
HNFRH27	683506	3905	171 - 1	13657	Lys-28 to Gln-36.	L0766: 2, H0341: 1 and H0271: 1.	
HNFRH85	506309	3906	164 - 376	13658	Lys-52 to Lys-57.	H0271: 2	
HNFRH81	766220	3907	59 - 400	13659	Ser-2 to Gly-11.	H0271: 2	
HNFRH14	939763	3908	2 - 448	13660	Leu-9 to Met-15.	AR061: 32, AR089: 21	
					Thr-25 to Cys-37.	H0271: 2	
					Glu-40 to Gly-45.		
					Leu-109 to His-115.		
HNFRH40	577110	3909	3 - 314	13661	Pro-25 to Gln-33.	H0271: 1, H0063: 1 and L0750: 1.	
HNFRH70	757261	3910	115 - 315	13662	Met-3 to Lys-15.	H0486: 1 and H0271: 1.	
HNFRH81	577329	3911	2 - 196	13663	Gly-1 to Asn-6.	H0255: 1, H0271: 1, S0052: 1 and S0053: 1.	
					Met-17 to Phe-23.		
					Thr-36 to Thr-52.		
HNFRH24	934305	3912	335 - 589	13664	Pro-5 to Asn-14.	H0271: 1, L0773: 1, L0363: 1, S0428: 1, L0748: 1 and L0749: 1.	
					Glu-20 to Thr-30.		
HNFRH44	716852	3913	84 - 293	13665	Gly-2 to Gly-8.	H0457: 3, H0250: 1, H0179: 1, H0271: 1 and S0053: 1.	
HNFRH29	860879	3914	2 - 583	13666	Glu-16 to Trp-34.	H0635: 1 and H0271: 1.	
HNFRH33	861010	3915	2 - 223	13667	Thr-10 to Thr-15.	H0457: 1, H0179: 1, H0271: 1 and H0416: 1.	
HNFRH47	523438	3916	230 - 319	13668		H0179: 2 and H0416: 1.	
HNFRH67	577326	3917	125 - 33	13669	Phe-1 to Asn-12.	H0416: 1 and S0052: 1.	
HNFRH22	577442	3918	86 - 352	13670	Pro-1 to Gly-11.	H0271: 1 and H0416: 1.	
					Glu-19 to Ala-27.		
					Gln-49 to Arg-63.		
HNFRH43	707264	3919	226 - 363	13671	Arg-18 to Ser-25.	H0416: 1 and S0144: 1.	
HNFRH18	576032	3920	2 - 166	13672	Cys-23 to Ala-29.	H0416: 2	
					Asn-33 to Leu-38.		

HNFIG07	918389	3921	2 - 478	13673	Gly-50 to Glu-61, Pro-63 to Glu-79, Arg-98 to Ser-107, Pro-126 to Arg-137.	H0581: 1 and H0416: 1.	
HNFIH79	576143	3922	264 - 109	13674		H0416: 1 and H0422: 1.	
HNFIJ46	919275	3923	240 - 476	13675		H0416: 1 and H0445: 1.	
HNFIK03	921951	3924	3 - 194	13676		H0416: 1 and S0052: 1.	
HNFIK37	576151	3925	90 - 236	13677		H0416: 2	
HNFIK44	506258	3926	94 - 330	13678		H0416: 2	
HNFIM13	657201	3927	102 - 434	13679	Arg-47 to Lys-60, Arg-67 to Trp-73.	H0416: 2	
HNFIM16	661500	3928	272 - 111	13680	Pro-31 to Arg-36.	H0416: 1 and H0488: 1.	
	860869	9581	590 - 925	19333	Gln-51 to Thr-78, Lys-95 to Thr-100.		
	964396	9582	327 - 587	19334			
HNFIN33	702415	3929	160 - 333	13681	Lys-1 to Cys-6, Ser-14 to Ser-19.	H0271: 1 and H0416: 1.	
HNFIN60	740372	3930	183 - 443	13682	Pro-18 to Gly-23, Phe-33 to Ala-39, Pro-64 to Trp-79.	H0416: 2	
HNFIN67	574569	3931	3 - 326	13683	Pro-19 to Pro-30, Pro-46 to Ser-55.	H0305: 2, H0271: 1 and H0416: 1.	
HNFIN83	779925	3932	1 - 318	13684	Pro-11 to Val-35, Gln-44 to Leu-52, Gln-92 to Phe-103.	H0402: 1 and H0416: 1.	
HNFI027	573095	3933	74 - 373	13685	Lys-3 to Trp-10, Lys-12 to Phe-17, Ser-32 to Ser-39, Cys-64 to Gln-71, Ala-73 to Asp-78.	H0271: 1, H0416: 1, S0052: 1 and S0053: 1.	
HNFI050	724374	3934	3 - 332	13686	Glu-8 to Ser-16, Ser-41 to Trp-46, Gly-50 to Gly-55, Leu-72 to Arg-80.	H0416: 1 and S0053: 1.	
HNFI082	921037	3935	1 - 210	13687	Ser-7 to Trp-22, Asn-30 to Arg-39.	H0271: 1 and H0416: 1.	

HNFIIP50	965283	3936		369 - 1067	13688	Pro-41 to Glu-46. Arg-1 to Trp-17, Ser-50 to Ser-56, Ser-74 to Ala-93, Gly-105 to Ser-116, Thr-177 to Leu-183.	H0656: 1 and H0416: 1.	
HNFIIP71	760366	3937		1 - 423	13689	Cys-6 to Thr-15. Asn-29 to Arg-34, Ala-49 to Ser-54, Pro-81 to Gly-86.	H0069: 1 and H0416: 1.	
HNFIQ17	768043	3938		183 - 440	13690	Pro-6 to Arg-17, Pro-62 to Glu-74.	H0271: 1, H0416: 1 and H0438: 1.	
HNFIQ74	765566	3939		2 - 136	13691	Glu-1 to Phe-13, Ser-17 to Trp-39.	H0271: 1 and H0416: 1.	
HNFIQ02	928109	3940		3 - 311	13692	Gln-1 to Ser-11, Cys-20 to Pro-26, Ala-30 to Arg-35, Pro-49 to Gly-57, Ser-72 to Cys-78, Pro-80 to Asp-86, Arg-96 to His-102.	H0416: 2	
HNFIQ32	848254	3941		161 - 472	13693	Arg-55 to Gln-61.	H0370: 1, H0416: 1 and H0436: 1.	
HNFIQ86	781175	3942		3 - 194	13694		H0271: 1 and H0416: 1.	
HNFIQ51	725648	3943		146 - 376	13695		H0416: 2	
HNFIQ31	697961	3944		1 - 90	13696		H0416: 1 and H0436: 1.	
HNFIU07	953268	3945		100 - 321	13697	Pro-12 to Ala-27.	H0556: 1 and H0416: 1.	
HNFIU14	967558	3946		2 - 166	13698	Ala-11 to Gly-21, Pro-41 to Gly-51.	H0271: 1 and H0416: 1.	
HNFIU24	677178	3947		192 - 392	13699		H0271: 1 and H0416: 1.	
HNFIU56	733363	3948		267 - 416	13700	Phe-19 to Lys-27.	H0416: 1 and S0002: 1.	
HNFIQ38	709265	3949		171 - 335	13701		H0416: 1, H0063: 1 and L0803: 1.	
HNFIQ73	764409	3950		3 - 242	13702	Asp-32 to Arg-48, Tyr-69 to Asn-74.	H0271: 1 and H0416: 1.	
HNFIQ62	740598	3951		172 - 354	13703	Asn-46 to Ala-61.	H0271: 1 and H0416: 1.	

HNFI247	720315	3952	3 - 188	13704	Arg-9 to Leu-15, Cys-36 to Thr-43, Cys-102 to Trp-110, Lys-123 to Glu-128, Met-151 to Glu-157.	H0271: 1 and H0416: 1. H0179: 2 and H0271: 2.
HNFI29	941525	3953	24 - 494	13705		
HNFI60	740362	3954	3 - 125	13706	Asn-1 to Asp-7.	H0271: 3
HNFI78	723390	3955	1 - 201	13707		H0271: 1 and H0264: 1.
HNFI80	752489	3956	219 - 392	13708	Leu-39 to Gly-44.	H0556: 1, H0271: 1 and H0543: 1.
HNFI30	574145	3957	1 - 243	13709	Asn-5 to Asp-12, Leu-15 to Trp-22.	H0271: 2
HNFI33	702411	3958	5 - 181	13710		
HNFI44	860847	3959	3 - 590	13711	Asp-1 to Ser-18, Ser-24 to Tyr-31, Glu-36 to Asp-41, Ile-49 to Leu-57, Glu-98 to Glu-103, Glu-118 to His-135, Gly-140 to Ala-146.	H0271: 1, H0063: 1 and L0439: 1.
HNFI59	738593	3960	263 - 472	13712	Arg-53 to Arg-60.	H0271: 1 and H0522: 1.
HNFI70	956187	3961	676 - 900	13713	Arg-2 to Thr-7.	S0053: 2, S0114: 1, S0116: 1, H0580: 1, H0179: 1, H0271: 1, H0090: 1, H0264: 1, L0805: 1, L0527: 1 and L0367: 1.
HNAC50	724666	3962	19 - 123	13714		H0402: 1 and S0052: 1.
HNAD53	527977	3963	1 - 225	13715		S0052: 2
HNAG45	526940	3964	5 - 295	13716	Gly-1 to Ala-11.	S0116: 2, L0667: 1, L0803: 1, S0052: 1, L0748: 1 and L0749: 1.
HNAG10	968271	3965	3 - 167	13717	Lys-11 to Thr-24.	S0052: 1 and S0216: 1.
HNAG27	573087	3966	152 - 271	13718	Gln-30 to Asp-35.	S0052: 2
HNAG13	676296	3967	197 - 367	13719	Pro-11 to Arg-21, His-43 to Lys-53.	S0052: 2
HNAG135	558467	3968	2 - 169	13720		S0052: 2

HNGAJ10	860751	3969	54 - 230	13721	Arg-14 to Lys-23, Phe-37 to Thr-45.	S0052: 2	
HNGAJ82	577407	3970	2 - 214	13722	Gln-1 to Lys-8, Pro-33 to Ser-58.	S0052: 2	
HNGAK12	660882	3971	3 - 248	13723	Arg-4 to Ile-11.	H0090: 1 and S0052: 1.	
HNGAK70	860770	3972	3 - 344	13724	Ser-2 to Phe-11.	S0052: 2	
HNGAL51	531719	3973	102 - 233	13725	Gly-1 to Thr-11, Gly-55 to Asn-60.	S0052: 2	
HNGAL84	573099	3974	180 - 1	13726	Thr-22 to Ile-29.	S0052: 2	
HNGAL88	574666	3975	80 - 256	13727	Ser-26 to Phe-32, Val-34 to Arg-42.	S0052: 2	
HNGAL92	953889	3976	3 - 212	13728		S0052: 2	
HNGAN28	685436	3977	2 - 115	13729		S0052: 2	
HNGAN78	577412	3978	127 - 444	13730	Pro-80 to Ser-88.	S0278: 1 and S0052: 1.	
HNGAO40	660305	3979	69 - 170	13731	Ala-25 to Gly-33.	S0052: 1 and S0053: 1.	
HNGAP18	666852	3980	127 - 333	13732	Asp-7 to Val-15, Arg-18 to Glu-26.	S0052: 2	
HNGAP59	916323	3981	2 - 166	13733	Pro-3 to Glu-8.	S0144: 1 and S0052: 1.	
HNGAQ54	574647	3982	3 - 164	13734	Arg-46 to Arg-54.	S0052: 2	
HNGAR83	574470	3983	3 - 290	13735		S0052: 2	
HNGAS51	773208	3984	21 - 218	13736		S0052: 1 and S0216: 1.	
HNGAU59	860839	3985	3 - 89	13737		S0052: 2	
HNGAU65	925692	3986	1 - 249	13738	Cys-5 to Ser-11, Pro-37 to Gly-42.	S0052: 1 and S0053: 1.	
HNGAV04	506589	3987	268 - 444	13739		S0052: 2	
HNGAV25	574671	3988	103 - 285	13740	Thr-29 to His-34.	S0052: 2	
HNGAV53	573092	3989	15 - 257	13741	Asn-1 to Cys-6, Glu-16 to Ser-25, Leu-41 to Lys-49, Val-70 to Glu-79.	S0052: 2	
HNGAV79	574661	3990	117 - 383	13742		S0052: 3	
HNGAV84	574651	3991	3 - 107	13743		S0052: 2	
HNGAV88	860753	3992	217 - 453	13744	Gly-1 to Glu-7.	S0052: 2	
HNGAW25	574645	3993	84 - 284	13745	Ser-1 to Asn-6, Arg-11 to Thr-23.	S0052: 2	

HNGAW40	711454	3994	2 - 229	13746		S0052: 2	
HNGAX82	507313	3995	22 - 258	13747		H0271: 1 and S0052: 1.	
HNGAZ49	715380	3996	1 - 216	13748	Gly-41 to Arg-46, Pro-59 to Pro-65.	H0402: 1, L0365: 1 and S0052: 1.	
HNGBB06	936080	3997	2 - 271	13749	Thr-24 to His-35.	S0052: 2, L0742: 1 and L0748: 1.	
HNGBC50	868082	3998	907 - 1395	13750	Gly-26 to Thr-36, His-88 to Lys-103.	AR050: 7, AR054: 3, AR051: 1	
HNGBE26	684761	3999	227 - 373	13751	Pro-6 to Lys-13.	S0052: 4	
HNGBF41	571331	4000	99 - 371	13752	Ser-15 to Lys-20, Ala-28 to Lys-33.	S0052: 2	
HNGBF80	574475	4001	1 - 132	13753		S0052: 2 and S0216: 1.	
HNGBG20	860739	4002	57 - 218	13754	Gln-2 to Asn-17, Gln-31 to Ala-36.	S0052: 2	
HNGBG50	577364	4003	1 - 219	13755		S0052: 1 and S0053: 1.	
HNGBH04	574469	4004	138 - 28	13756		S0052: 2	
HNGBH77	577361	4005	115 - 243	13757		S0052: 2	
HNGBI10	968246	4006	1 - 165	13758		S0052: 2	
HNGBI35	574403	4007	10 - 114	13759		S0052: 2	
HNGBI70	781978	4008	2 - 442	13760		S0052: 2	
HNGBI88	574409	4009	86 - 343	13761		S0052: 2	
HNGBI95	785983	4010	2 - 127	13762		S0052: 2	
HNGBJ40	948741	4011	373 - 576	13763	Glu-1 to Gln-7, Leu-13 to Gln-20, Lys-32 to Gly-39.	S0052: 2 and S0428: 1.	
HNGBJ84	573072	4012	1 - 180	13764	Lys-1 to Lys-11.	S0052: 2	
HNGBJ96	574474	4013	3 - 122	13765		S0052: 2	
HNGBN36	526808	4014	216 - 437	13766	Arg-8 to Leu-30, Ala-32 to Leu-37.	S0052: 3	
HNGBO34	932408	4015	227 - 373	13767		S0052: 2	
HNGBP21	671258	4016	2 - 208	13768		H0250: 1, S0052: 1, L0754: 1 and L0581: 1.	
HNGBP28	421816	4017	1 - 213	13769		S0052: 2	
HNGBP35	526806	4018	1 - 75	13770	Gly-1 to Asn-7,	S0052: 3 and S0426: 1.	

HNGBO20	859846	4019	227 - 526	13771	Ser-15 to Phe-20, Val-1 to Tyr-12.	S0052: 1 and S0216: 1.
HNGBO75	573047	4020	83 - 253	13772		S0052: 2
HNGBS88	575561	4021	86 - 247	13773	Ser-44 to Arg-52.	S0052: 2
HNGBT44	574400	4022	153 - 281	13774		S0052: 2
HNGBT58	577325	4023	200 - 337	13775	Ala-1 to Arg-17.	S0052: 2
HNGBT72	579064	4024	169 - 285	13776	His-12 to Thr-20, Ile-34 to Tyr-39.	S0052: 2
HNGBU15	574467	4025	71 - 151	13777		S0052: 2
HNGBV67	574468	4026	2 - 148	13778		S0052: 2
HNGBW63	574466	4027	3 - 131	13779	Lys-9 to Ser-18.	S0052: 2
HNGBX64	574472	4028	1 - 108	13780		S0052: 2
HNGBZ16	667293	4029	220 - 318	13781	Gln-9 to Lys-14.	S0052: 2
HNGBZ17	575717	4030	292 - 450	13782		S0052: 2 and S0428: 1.
HNGBZ20	812895	4031	21 - 176	13783	Gln-24 to Glu-32, Ser-41 to Trp-50.	S0052: 2
HNGBZ55	573069	4032	143 - 256	13784		S0052: 2 and L0800: 1.
HNGBZ92	574464	4033	2 - 151	13785		S0052: 2
HNGCA47	574465	4034	2 - 205	13786		S0052: 2 and S0216: 1.
HNGCA61	574461	4035	4 - 219	13787	Arg-4 to Arg-10, Arg-27 to Pro-44.	S0052: 2
HNGCB44	674570	4036	158 - 289	13788	Gln-18 to Asp-24.	S0052: 1 and S0053: 1.
HNGCC47	926947	4037	1 - 144	13789	Trp-11 to Leu-17, Pro-20 to Pro-28, Ala-32 to Gly-48.	S0052: 1 and S0428: 1.
HNGCD08	959963	4038	22 - 177	13790	Cys-16 to Arg-28, Cys-30 to Asn-40.	S0052: 1 and S0216: 1.
HNGCE85	970738	4039	2 - 154	13791		S0052: 2
HNGCF09	527972	4040	2 - 100	13792		S0052: 2
HNGCF28	574397	4041	3 - 113	13793	His-1 to Asn-7.	S0052: 2
HNGCG83	868075	4042	236 - 403	13794		S0052: 2
HNGCH05	932404	4043	183 - 335	13795	Leu-1 to Asn-6, Ser-23 to Glu-28, Ser-36 to Glu-44.	H0063: 1, S0052: 1, L0748: 1, L0745: 1 and L0749: 1.
HNGCI02	920722	4044	14 - 214	13796	Thr-37 to Pro-44.	S0052: 1 and S0428: 1.

HNGC111	967513	4045	2 - 223	13797	Phe-20 to Leu-26.	S0052: 1 and S0053: 1.
HNGC117	526807	4046	56 - 226	13798	Leu-1 to Ser-7.	S0052: 2
HNGC153	825377	4047	61 - 270	13799	Gly-18 to Ala-23, Pro-31 to Leu-41, Pro-57 to Glu-67.	S0052: 2
HNGC169	574456	4048	3 - 278	13800	Thr-68 to Thr-81.	S0052: 2
HNGC134	706561	4049	78 - 206	13801	Pro-21 to Ser-31.	S0052: 1 and S0053: 1.
HNGC182	796479	4050	38 - 142	13802	Asn-1 to Thr-6.	S0052: 2
HNGC193	574458	4051	151 - 276	13803		S0052: 2
HNGC131	571332	4052	154 - 408	13804	Ser-6 to Pro-12, Ser-22 to Lys-30.	S0052: 2 and L0758: 1.
HNGC155	574453	4053	3 - 167	13805	Phe-1 to Arg-11, Asp-34 to Asn-42.	S0052: 2
HNGCM05	932409	4054	2 - 139	13806	Glu-10 to Arg-15.	S0052: 1 and S0053: 1.
HNGC037	708694	4055	101 - 409	13807	Phe-16 to Ser-39.	S0052: 2
HNGC045	573055	4056	22 - 255	13808	Tyr-2 to Ser-8.	S0052: 2
HNGC086	779203	4057	152 - 3	13809		S0052: 1 and S0428: 1.
HNGC037	708698	4058	1 - 258	13810	Gly-26 to Pro-32.	S0052: 2
HNGC024	574339	4059	67 - 138	13811		S0052: 2
HNGC070	574340	4060	3 - 155	13812	Val-1 to Glu-10, Pro-38 to Trp-43.	S0052: 2
HNGCW38	574463	4061	115 - 321	13813	Glu-19 to Pro-25.	S0052: 2 and S0428: 1.
HNGCW81	577253	4062	236 - 346	13814	Lys-7 to Glu-16.	L0766: 1, S0052: 1 and H0445: 1.
HNGCW82	574344	4063	134 - 307	13815	Lys-1 to Ser-14, Lys-38 to Tyr-43.	S0052: 2
HNGCW83	574338	4064	3 - 113	13816	Arg-1 to Gly-7, Val-9 to Gly-17.	S0052: 2
HNGCX07	953900	4065	3 - 287	13817	Lys-55 to Glu-63.	S0052: 2
HNGCY37	952203	4066	81 - 428	13818	Lys-19 to Gly-28, Glu-37 to Gly-57, Ser-81 to His-99.	S0052: 1 and S0428: 1.
HNGCY41	806055	4067	36 - 143	13819		S0052: 1 and S0428: 1.
HNGCY43	574392	4068	1 - 258	13820	Lys-17 to Lys-23, Glu-40 to Trp-46.	S0052: 2



HNGCY59	959967	4069	112 - 297	13821	Lys-8 to Gly-18, Ser-31 to Asp-50, Pro-55 to Gly-60.	L0766: 3, S0052: 2, L0598: 1, L0659: 1 and L0759: 1.
HNGCZ13	660916	4070	34 - 240	13822	His-4 to Glu-10, Lys-31 to Ala-37.	S0052: 2
HNGDA09	574454	4071	1 - 156	13823	Ser-1 to Arg-20, Pro-32 to Phe-38.	S0052: 2
HNGDA56	574452	4072	18 - 260	13824	Pro-1 to Thr-10, Pro-17 to Pro-23.	S0052: 2
HNGDB25	784836	4073	96 - 296	13825	His-48 to Thr-53, Pro-55 to Glu-61.	S0052: 1 and S0428: 1.
HNGDB65	526852	4074	81 - 260	13826	Leu-16 to Asn-22.	S0052: 2
HNGDD30	573021	4075	94 - 273	13827		S0052: 2
HNGDD39	709270	4076	9 - 164	13828		S0052: 2
HNGDD73	764596	4077	264 - 464	13829		S0052: 2
HNGDE07	953858	4078	2 - 133	13830	Arg-5 to Gly-10, Val-17 to Trp-29, Arg-31 to Val-36.	S0052: 2
HNGDE31	794124	4079	125 - 244	13831		H0580: 1 and S0052: 1.
HNGDF48	723368	4080	3 - 161	13832	Gly-16 to Pro-22.	S0052: 2
HNGDF72	766217	4081	135 - 269	13833	Arg-35 to Pro-40.	S0052: 2
HNGDGG6	577237	4082	59 - 259	13834	Thr-1 to Phe-8, Cys-12 to Glu-17.	S0052: 2
HNGDH09	573022	4083	118 - 264	13835		S0052: 2
HNGDH37	917254	4084	70 - 183	13836		S0052: 2
HNGDI52	914629	4085	3 - 242	13837	Gln-26 to Trp-41.	H0566: 1, H0650: 1, H0250: 1 and S0052: 1.
HNGDH96	573060	4086	77 - 265	13838	Cys-48 to Asn-58.	S0052: 2 and S0428: 1.
HNGDK17	860684	4087	3 - 365	13839	His-1 to Gly-16.	S0052: 2
HNGDK41	574559	4088	223 - 387	13840	Ser-11 to Asn-21, Pro-23 to Met-32.	S0052: 2
HNGDL32	935842	4089	61 - 369	13841	Ser-1 to Leu-7, Ser-26 to Tyr-35.	S0052: 2
HNGDL72	574451	4090	1 - 66	13842		S0052: 2
HNGDL93	927582	4091	46 - 108	13843		S0052: 2

HNGDO17	973285	4092	240 - 629	13844	Gly-23 to Pro-31, His-40 to Met-55.	H0416: 1 and S0052: 1.
HNGDP10	968221	4093	2 - 178	13845		S0052: 2
HNGDP13	574484	4094	2 - 121	13846	Ala-1 to Tyr-7, Pro-17 to Asn-25.	S0052: 2
HNGDP27	574482	4095	278 - 445	13847		S0052: 2 and L0666: 1.
HNGDP29	574488	4096	150 - 413	13848	Pro-16 to Gln-22.	S0052: 2
HNGDP30	574480	4097	195 - 365	13849	Met-35 to His-42.	S0052: 2
HNGDP71	574481	4098	157 - 360	13850		S0052: 2
HNGDP74	860669	4099	51 - 500	13851		S0052: 2
HNGDP89	574478	4100	133 - 261	13852		S0052: 2
HNGDP95	574477	4101	2 - 190	13853	Gly-2 to Phe-10, Pro-29 to Ser-34.	S0052: 2
HNGDR19	953672	4102	65 - 388	13854	Glu-11 to Ala-16, Pro-34 to Ser-41,	S0052: 2
HNGDR42	657404	4103	53 - 181	13855	Leu-74 to Thr-80, Ser-2 to Ser-9, Thr-26 to Cys-36.	S0052: 2
HNGDR79	572904	4104	92 - 262	13856		S0052: 2
HNGDR81	572901	4105	2 - 124	13857		S0052: 2
HNGDR88	860666	4106	198 - 323	13858	Asn-8 to Met-14.	S0052: 2
HNGDS04	572909	4107	3 - 263	13859	His-1 to Pro-8, Glu-16 to Pro-42, Phe-63 to Lys-76, Pro-78 to Asp-87.	S0052: 2
HNGDS59	576763	4108	28 - 114	13860	Gln-19 to Gly-24.	S0052: 5
HNGDS96	796488	4109	1 - 408	13861	Arg-23 to Tyr-29, Gly-36 to Gly-43.	S0052: 1 and S0428: 1.
HNGDTS6	572895	4110	3 - 290	13862	His-1 to His-6, Arg-21 to Trp-30, Glu-40 to Ala-56, Thr-83 to Trp-89.	S0052: 2
HNGDU45	722062	4111	16 - 372	13863	Pro-22 to Thr-28, Gly-35 to Cys-43.	S0052: 1 and S0053: 1.
HNGDV22	572910	4112	41 - 280	13864		S0052: 2
HNGDV25	573152	4113	128 - 259	13865		H0341: 1 and S0052: 1.

HNGDV59	739407	4114	112 - 2	13866	Pro-2 to Ser-10, Ser-16 to His-21.	S0052: 2
HNGDV96	796487	4115	192 - 446	13867		S0052: 1 and S0428: 1.
HNGDW23	516773	4116	3 - 221	13868	Gly-9 to Arg-19, Thr-23 to Trp-31, Pro-37 to Arg-44, Lys-53 to Gly-59, Arg-65 to Ala-73.	S0052: 2
HNGDW62	573162	4117	80 - 274	13869		S0052: 2
HNGDW95	661943	4118	267 - 425	13870	Thr-25 to Glu-31.	H0421: 1 and S0052: 1.
HNGDX50	860661	4119	23 - 142	13871	Thr-1 to Gly-18.	S0052: 2
HNGDY12	870390	4120	289 - 552	13872		S0134: 1 and S0052: 1.
HNGDY14	968042	4121	1 - 238	13873	Gln-7 to Thr-17.	S0052: 2
HNGDY39	572908	4122	218 - 409	13874	Arg-17 to Cys-24, Pro-39 to Met-44.	S0052: 2 and S0428: 1.
HNGDY92	920168	4123	3 - 212	13875	Lys-13 to Leu-26, Glu-61 to Arg-70.	S0052: 2
HNGDZ52	572865	4124	221 - 361	13876	Asp-1 to Ser-9.	S0052: 2
HNGEA44	572855	4125	2 - 118	13877		S0052: 2
HNGEA82	778879	4126	1 - 177	13878	Gly-10 to Arg-21, Val-28 to Lys-37, Pro-54 to Tyr-59.	S0052: 1 and S0053: 1.
HNGEA88	578911	4127	20 - 190	13879	Thr-23 to Leu-32.	S0052: 2
HNGEB79	576743	4128	2 - 220	13880	Pro-25 to Ala-33, Lys-42 to His-48.	S0052: 2
HNGEB81	572862	4129	12 - 242	13881	Ala-10 to Cys-16, Arg-33 to Trp-40.	S0052: 2
HNGEB91	924912	4130	123 - 338	13882		S0052: 3
HNGEC02	917530	4131	487 - 846	13883	Pro-7 to Gly-13, Gly-18 to Gly-38.	AR054: 9, AR051: 4, AR050: 0
HNGEC06	935840	4132	2 - 157	13884	Ala-1 to Tyr-8.	H0556: 1 and S0052: 1.
HNGEC41	782294	4133	11 - 217	13885		S0052: 2
HNGEC43	573040	4134	258 - 374	13886	Gln-1 to Thr-7.	S0052: 1 and S0216: 1.
HNGEC44	806031	4135	162 - 359	13887		S0052: 2
HNGEC75	916809	4136	199 - 597	13888	Arg-1 to Trp-11.	S0052: 1 and S0428: 1. S0053: 2, H0439: 1, L0809:

HNGED03	924696	4137	2 - 259	13889	Pro-19 to Ser-33. Ala-1 to Arg-9, Ala-22 to Gln-33.	1, S0052: 1 and L0758: 1. S0052: 1 and S0428: 1.
HNGED21	920156	4138	3 - 194	13890	Asp-29 to Gln-42.	S0052: 2
HNGED77	572868	4139	95 - 277	13891	His-7 to Ser-12.	S0052: 2
HNGED91	790309	4140	3 - 287	13892		S0052: 1 and S0428: 1.
HNGEBE18	573018	4141	1 - 207	13893	Val-16 to His-21, Ser-49 to Cys-59.	S0052: 2
HNGEBE39	573065	4142	1 - 306	13894	Pro-5 to Asn-10, Trp-24 to Ser-29, Met-58 to Arg-65, Ala-67 to Gly-72, Glu-78 to Glu-86.	S0052: 4
HNGEF58	708692	4143	12 - 305	13895		S0052: 2
HNGEG45	572880	4144	22 - 168	13896	Thr-37 to Gly-42.	S0052: 2
HNGEG74	806885	4145	200 - 418	13897		S0052: 2
HNGEG85	784431	4146	77 - 223	13898	Thr-20 to Tyr-26.	S0428: 2 and S0052: 1.
HNGEG86	573049	4147	2 - 172	13899		S0052: 2
HNGEI22	967310	4148	2 - 241	13900	Arg-2 to Lys-23, Gly-34 to Gly-45, Tyr-64 to Lys-69.	S0052: 2
HNGEI47	720471	4149	142 - 453	13901		S0052: 2
HNGEI04	932199	4150	53 - 253	13902		S0052: 2
HNGEI22	573066	4151	1 - 195	13903	Glu-1 to Thr-11, Gly-27 to Gly-34, Leu-46 to His-53.	S0052: 3
HNGEI35	934987	4152	263 - 490	13904		H0318: 1 and S0052: 1.
HNGEK30	572864	4153	47 - 202	13905	Lys-13 to Leu-22, Thr-26 to Lys-33.	S0052: 2
HNGEK44	576745	4154	1 - 291	13906	Gly-1 to Asn-8, Ala-23 to Ala-34, Ile-80 to Trp-87.	S0052: 3
HNGEK68	753159	4155	46 - 342	13907	Ser-1 to Lys-14, Gly-18 to His-30, Glu-35 to Lys-40.	S0052: 2
HNGEI 62	958363	4156	1 - 333	13908		S0052: 1, S0428: 1 and

HNGEL92	572867	4157						L0748: 1.	
HNGEM38	573041	4158	152 - 373	13909				S0052: 2 and S0428: 1.	
			156 - 272	13910			Gln-1 to Ala-9, Cys-24 to Lys-31.	S0052: 2	
HNGEM53	860643	4159	42 - 272	13911			Pro-27 to Gly-34, Ser-37 to Arg-42.	S0052: 2	
HNGEN37	663955	4160	2 - 259	13912			Asn-9 to Arg-14, Asn-21 to Leu-26.	AR089: 1, AR061: 0	
HNGEN45	572876	4161	204 - 362	13913			Ser-15 to Thr-21.	S0052: 2	
HNGEP55	732262	4162	1 - 273	13914			Gln-32 to Asn-39, Arg-67 to Ser-73.	S0052: 2	
HNGEP61	576749	4163	2 - 226	13915			Gln-10 to Ala-20, Thr-36 to Gly-43, Arg-69 to Ile-74.	S0052: 2	
HNGEP64	860631	4164	338 - 75	13916			Val-1 to Lys-12.	H0306: 1, H0402: 1, H0305: 1 and S0052: 1.	
HNGEP70	572858	4165	31 - 108	13917			His-1 to Asp-7.	S0052: 2	
HNGEP75	766574	4166	113 - 268	13918				S0052: 1 and S0053: 1.	
HNGEP77	861710	4167	145 - 366	13919			Gly-1 to Gly-9, Glu-67 to Arg-73.	H0271: 1, S0052: 1 and L0439: 1.	
HNGEP81	778161	4168	566 - 880	13920				S0052: 1, S0216: 1 and H0445: 1.	
HNGEQ07	953647	4169	44 - 349	13921			Ala-15 to Phe-23, Glu-35 to Gly-41.	S0052: 1 and S0216: 1.	
HNGEQ32	572984	4170	3 - 278	13922			Thr-7 to Gly-13.	H0341: 1, L0769: 1, L0789: 1, L0791: 1, S0052: 1 and L0777: 1.	
								S0052: 2 and S0428: 1.	
HNGEQ67	860687	4171	73 - 270	13923				S0052: 2	
HNGER25	572873	4172	2 - 97	13924				AR061: 3, AR089: 2	
HNGER43	699391	4173	97 - 204	13925				S0052: 3	
HNGER67	578903	4174	337 - 507	13926				S0052: 2	
HNGER82	945838	4175	226 - 546	13927			Asn-1 to Gly-6, Glu-23 to Gly-29.	AR061: 1, AR089: 1 L0748: 5, H0444: 2, H0402: 1, L0367: 1 and S0052: 1.	
HNGER84	586451	4176	116 - 319	13928				S0052: 2	120435, 120435, 2p22-p21

[illegible]

HNGEW18	958328	4197	14 - 136	13949	Ser-11 to Tyr-16.	S0052: 1 and S0428: 1.
HNGEW76	572874	4198	104 - 274	13950	Ile-44 to His-52.	S0052: 2
HNGEX06	935838	4199	147 - 323	13951	Thr-1 to Phe-7, Ile-39 to Asn-45.	S0052: 3 and S0428: 1.
HNGEX35	959230	4200	14 - 376	13952		S0052: 2
HNGEX76	834919	4201	59 - 337	13953		H0179: 1 and S0052: 1.
HNGEX95	572897	4202	124 - 327	13954		S0052: 2
HNGEY41	973310	4203	123 - 293	13955		S0052: 2
HNGEY50	676067	4204	2 - 154	13956		S0052: 2
HNGEY60	920375	4205	1 - 171	13957	Val-21 to Gly-33, Glu-45 to Gly-50.	S0052: 2
HNGEY80	790222	4206	256 - 426	13958	Ser-22 to Trp-31.	S0052: 2
HNGEY84	752239	4207	188 - 481	13959	Glu-7 to Asn-15.	H0179: 1 and S0052: 1.
HNGEZ45	574462	4208	79 - 333	13960	Glu-1 to Glu-18, Lys-46 to Lys-53.	S0052: 3
HNGFA28	774277	4209	248 - 679	13961		S0052: 1 and S0216: 1.
HNGFA39	424813	4210	41 - 478	13962	Thr-17 to Gly-30, Gly-32 to Val-38.	S0052: 2
HNGFA41	952235	4211	148 - 2	13963		S0052: 1 and S0428: 1.
HNGFA67	576719	4212	151 - 318	13964		S0052: 2
HNGFA80	963490	4213	65 - 349	13965		S0052: 1 and S0428: 1.
HNGFB08	959738	4214	3 - 131	13966		S0052: 2
HNGFB32	573575	4215	1 - 339	13967	Gly-1 to Ala-15, Ala-17 to Ser-25, Pro-32 to Arg-44, Pro-55 to His-60.	H0305: 2 and S0052: 1.
HNGFB57	868072	4216	129 - 263	13968	Pro-14 to Ser-21.	S0052: 2
HNGFB74	573024	4217	2 - 136	13969	Pro-2 to Thr-11, Lys-22 to Leu-27.	S0052: 2
HNGFC71	573160	4218	3 - 167	13970	Glu-25 to Trp-33, Leu-49 to Arg-55.	S0052: 1 and S0053: 1.
HNGFD63	835997	4219	54 - 470	13971	Pro-10 to Ser-19, Ser-29 to Leu-47, Ala-60 to Gly-66.	S0052: 1 and S0053: 1.
HNGFD75	823462	4220	1 - 366	13972		S0052: 2

HNGFD85	783467	4221	118 - 351	13973	Lys-7 to Thr-20, Ser-28 to Gly-43.	S0052: 1 and S0428: 1.	
HNGFD96	968248	4222	40 - 285	13974		S0052: 2, L0742: 2 and L0592: 1.	
HNGFF35	805996	4223	194 - 451	13975	Pro-1 to Asn-10, Arg-23 to Cys-29.	S0052: 1 and S0428: 1.	
HNGFG22	573084	4224	91 - 261	13976	Gly-25 to Ser-35, Ser-44 to Val-49, Ser-51 to Asp-57.	AR061: 8, AR089: 3 S0052: 2	
HNGFG51	725787	4225	45 - 200	13977	Arg-1 to Lys-8.	H0305: 2 and S0052: 1.	
HNGFG57	860595	4226	40 - 339	13978	Arg-60 to Trp-66, Leu-68 to Ile-74, Glu-82 to Gly-89.	S0052: 2 and L0748: 1.	
HNGFG69	926873	4227	1 - 315	13979	Pro-6 to Ser-13, Arg-19 to Gln-35, Thr-54 to Ala-61, His-73 to Cys-78.	S0052: 1 and S0428: 1.	
HNGFH94	966118	4228	262 - 393	13980	Lys-1 to Arg-15, Pro-17 to Asp-23, Pro-38 to Lys-44.	S0052: 1 and S0428: 1.	
HNGFI06	935828	4229	240 - 371	13981	Gly-20 to Lys-26, Pro-40 to Lys-47.	S0052: 1 and S0428: 1. S0052: 2	
HNGFI20	578896	4230	90 - 332	13982		H0255: 1 and S0052: 1. S0052: 2	
HNGFI32	699398	4231	224 - 346	13983		S0002: 1 and S0052: 1.	
HNGFI81	578892	4232	202 - 381	13984		AR061: 6, AR089: 2 S0052: 3	
HNGFI27	860591	4233	78 - 272	13985			
HNGFK28	544726	4234	1 - 756	13986	Glu-4 to Asn-15, Ser-104 to Gly-111, Leu-230 to Pro-237.		
	566798	9584	1 - 756	19336	Glu-4 to Asn-15, Ser-104 to Gly-111, Leu-230 to Pro-237.		
	943114	9585	351 - 1	19337	Gln-1 to Ile-15, Leu-76 to Arg-82, Glu-90 to Thr-96.		



	943115	9586	3 - 530	19338	Glu-6 to Asn-17, Ser-106 to Gly-113.	
HNGFK44	860389	4235	46 - 177	13987		S0052: 2
HNGFL04	572833	4236	1 - 153	13988	Ser-4 to Thr-12, Thr-23 to Thr-30.	S0052: 2
HNGFM50	584729	4237	1 - 324	13989	Thr-2 to Arg-11, Asp-30 to Gly-35.	S0052: 2
HNGFM74	578884	4238	471 - 310	13990	Glu-19 to Pro-24, Ser-49 to Thr-54.	H0583: 1, H0402: 1 and S0052: 1.
HNGFM79	860385	4239	1 - 300	13991	Pro-35 to Ser-40, Thr-64 to Ser-70.	S0052: 2
HNGFN21	572821	4240	2 - 205	13992	Ser-12 to Thr-19, Pro-58 to Gln-65.	S0052: 3, H0556: 1 and L0777: 1.
HNGFN56	970740	4241	167 - 349	13993		S0052: 3
HNGFN65	576698	4242	1 - 285	13994	Gln-21 to Gly-29, Pro-39 to Asn-44.	S0052: 2
HNGFN96	770209	4243	170 - 295	13995		S0052: 2
HNGFO46	935135	4244	3 - 215	13996	Pro-1 to Gly-6.	H0580: 2 and S0052: 1.
HNGFO55	572856	4245	3 - 266	13997	Lys-16 to Arg-21, Leu-30 to Pro-35, Asn-48 to Gly-53, Ala-68 to Ser-78.	S0052: 2
HNGFO81	526792	4246	69 - 263	13998	Pro-48 to Gly-55.	AR061: 2, AR089: 0 S0052: 2
HNGFP02	920483	4247	11 - 205	13999	Lys-25 to Glu-36.	S0052: 2
HNGFP08	959730	4248	2 - 376	14000	Gln-34 to Gly-39, Lys-70 to Gly-80.	S0052: 2
HNGFP62	573052	4249	42 - 302	14001		S0052: 1 and S0053: 1.
HNGFP80	931021	4250	109 - 372	14002		S0052: 2
HNGFP93	707332	4251	187 - 360	14003	Asn-1 to Gln-9.	S0052: 3
HNGFQ36	703715	4252	74 - 370	14004	His-1 to Gly-15.	H0580: 1 and S0052: 1.
HNGFQ58	576715	4253	109 - 279	14005	Thr-22 to Asp-28, Glu-43 to Gly-49.	S0052: 2 and H0583: 1.
HNGFR02	920482	4254	89 - 286	14006	Lys-8 to Lys-19, Glu-25 to Glu-34, Ala-38 to Gln-53.	S0052: 1 and S0428: 1.

HNGFR16	573358	4255	37 - 303	14007		S0053: 2 and S0052: 1.
HNGFR48	860245	4256	178 - 450	14008	Cys-41 to Ser-47.	S0052: 1, S0428: 1 and L0748: 1.
HNGFR73	646263	4257	268 - 405	14009	Pro-7 to Lys-20,	S0052: 2 and H0063: 1.
HNGFR80	576713	4258	185 - 337	14010	Glu-45 to Cys-50.	S0052: 3
HNGFR85	572838	4259	151 - 240	14011	Phe-17 to His-23.	S0052: 2
HNGFR86	573094	4260	3 - 209	14012		S0052: 2
HNGFR88	932396	4261	2 - 313	14013		S0052: 2
HNGFR89	572828	4262	132 - 341	14014		S0052: 2
HNGFR90	671599	4263	2 - 214	14015	Met-13 to Phe-23,	S0052: 1 and S0053: 1.
					Glu-29 to Trp-40,	
					Arg-63 to Lys-71.	
HNGFR177	772335	4264	113 - 328	14016	Gly-1 to Glu-9.	S0052: 1 and S0216: 1.
HNGFR12	971170	4265	45 - 290	14017		AR089: 4, AR061: 1
						S0052: 1 and S0428: 1.
HNGFR28	860576	4266	82 - 189	14018		S0052: 2
HNGFR40	559450	4267	2 - 367	14019	Arg-16 to Thr-40.	S0052: 2
HNGFR03	924670	4268	2 - 211	14020		S0052: 1 and S0428: 1.
HNGFR32	806047	4269	15 - 326	14021		S0052: 1 and S0428: 1.
HNGFR09	924693	4270	218 - 340	14022		S0052: 2
HNGFR15	578901	4271	3 - 200	14023	Trp-8 to Ser-14.	S0052: 2
HNGFR31	578864	4272	149 - 331	14024	Ile-1 to Asn-21,	S0052: 2
					Lys-38 to Thr-43.	
HNGFR82	839957	4273	7 - 87	14025	Ser-3 to Lys-10.	S0052: 2
HNGFR96	959715	4274	360 - 473	14026		S0052: 3
HNGGA08	959637	4275	78 - 206	14027	Ser-34 to Phe-41.	S0052: 2
HNGGA10	964820	4276	102 - 263	14028		S0052: 2
HNGGA20	764502	4277	27 - 290	14029	Leu-39 to Ile-46,	H0250: 2 and S0052: 2.
					Pro-48 to Pro-53.	
HNGGA40	506337	4278	68 - 256	14030	Thr-45 to Cys-53.	S0052: 2
HNGGA44	577362	4279	136 - 2	14031		S0052: 2 and S0428: 1.
HNGGA53	576212	4280	154 - 348	14032	Gly-56 to Ala-62.	S0052: 2
HNGGA90	572869	4281	1 - 210	14033		S0052: 3
HNGGB09	881399	4282	217 - 294	14034		S0052: 2

HNGGEI0	964821	4283	28 - 171	14035		S0052: 2	
HNGGE38	576217	4284	53 - 136	14036	Gly-8 to Arg-17.	S0052: 2 and S0428: 1.	
HNGGF02	840277	4285	56 - 301	14037		S0052: 2	
HNGGF03	924587	4286	165 - 383	14038		S0052: 2	
HNGGF06	935709	4287	19 - 153	14039	Gly-18 to Thr-24, Pro-38 to Lys-45.	S0052: 2	
HNGGF26	577369	4288	65 - 226	14040	Arg-15 to Leu-20.	S0052: 3	
HNGGF57	576256	4289	131 - 319	14041	Arg-1 to Val-10, Ser-15 to Phe-24, Leu-46 to Lys-52.	S0052: 2	
HNGGG02	920379	4290	2 - 298	14042	Pro-23 to Asn-28, Ser-43 to Gly-51, Gly-75 to Trp-86.	S0052: 2	
HNGGG10	964818	4291	9 - 185	14043	Ser-7 to Asp-19, Trp-32 to Val-38, Lys-45 to Asp-53.	S0052: 4	
HNGGG15	576294	4292	2 - 160	14044	Tyr-18 to Asn-23.	S0052: 2	
HNGGG18	506304	4293	64 - 282	14045	Ala-27 to Glu-32.	S0052: 2	
HNGGG22	576267	4294	124 - 276	14046	Gln-9 to Glu-14.	S0052: 2	
HNGGG25	679153	4295	2 - 106	14047		S0052: 2	
HNGGG26	576298	4296	2 - 283	14048	Asn-28 to Ser-35, Lys-50 to Pro-56.	S0052: 2	
HNGGG50	576295	4297	135 - 296	14049		S0052: 2	
HNGGG56	733510	4298	160 - 309	14050		S0052: 2	
HNGGG63	576296	4299	127 - 378	14051	Gln-10 to Glu-18, Glu-25 to Val-30.	S0052: 2	
HNGGG76	576231	4300	89 - 232	14052		S0052: 2	
HNGGH38	582695	4301	1 - 156	14053	Gly-6 to Ala-14.	S0052: 2	
HNGGH48	576705	4302	106 - 303	14054	Leu-9 to Cys-14, Ile-44 to Asp-50, Ser-56 to Leu-62.	S0052: 2	
HNGGH57	576278	4303	3 - 143	14055	Lys-16 to His-21, Ala-32 to Tyr-37.	S0052: 2	
HNGGH64	860426	4304	169 - 423	14056	Glu-19 to Gly-26, Gly-41 to Thr-47, Ser-79 to Glu-85.	S0052: 2	

HNGGH74	577192	4305	164 - 346	14057		S0052: 2	
HNGGH78	924908	4306	159 - 431	14058	Lys-19 to Arg-26.	S0052: 2	
HNGGH95	576214	4307	36 - 344	14059		S0052: 3	
HNGGH08	959639	4308	3 - 158	14060	Asn-11 to Gly-18, Glu-28 to Gly-35.	S0052: 2	
HNGGI52	576270	4309	1 - 168	14061	Arg-14 to Arg-19.	S0052: 3	
HNGGI58	825371	4310	1 - 117	14062		S0052: 2	
HNGGI81	830081	4311	155 - 286	14063		S0052: 3 and L0600: 2.	
HNGGK31	576259	4312	72 - 1	14064	Lys-1 to Lys-7.	S0052: 2	
HNGGK53	576253	4313	2 - 202	14065	Lys-20 to Trp-27.	S0052: 2	
HNGGK86	576247	4314	102 - 269	14066		S0052: 2	
HNGGK94	576255	4315	69 - 179	14067	Ser-1 to Tyr-7	S0052: 2	
HNGGL51	576758	4316	48 - 260	14068	Gln-29 to Lys-35, Lys-46 to Arg-52, Ser-58 to Ser-63.	S0052: 2	
HNGGM10	964819	4317	175 - 582	14069	Lys-1 to Asn-8.	S0052: 1 and S0428: 1.	
HNGGM41	576284	4318	137 - 316	14070	Ser-22 to Arg-28.	S0052: 2	
HNGGM56	576219	4319	1 - 150	14071	Asn-9 to Trp-16, Ala-20 to Phe-31, Lys-39 to Gly-45.	S0052: 2	
HNGGM67	576220	4320	189 - 380	14072	Arg-29 to Trp-34.	S0052: 2	
HNGGM76	576287	4321	2 - 298	14073	Ser-19 to Ser-24.	S0052: 2	
HNGGM92	576229	4322	85 - 309	14074		S0052: 2	
HNGGN03	924578	4323	1 - 294	14075	Pro-22 to Thr-28, Pro-63 to Arg-70.	S0052: 2	
HNGGN04	576263	4324	2 - 238	14076		S0052: 2	
HNGGN16	576268	4325	43 - 255	14077	Pro-8 to Gly-18.	S0052: 2	
HNGGN36	708119	4326	2 - 211	14078	His-14 to Trp-27.	S0052: 2	
HNGGN64	577319	4327	1 - 123	14079		S0052: 2	
HNGGN94	967253	4328	14 - 127	14080	Gly-20 to Gln-28.	S0052: 2	
HNGGO01	916754	4329	155 - 340	14081	Lys-30 to Thr-36.	S0052: 2	
HNGGO14	860246	4330	164 - 328	14082	Phe-40 to Gln-48.	S0052: 1 and S0428: 1.	
HNGGO25	576277	4331	2 - 163	14083		S0052: 2	
HNGGO31	576238	4332	1 - 132	14084	Gly-1 to Gln-8, Ser-16 to Arg-21.	S0052: 2	

HNGGQ41	712426	4333	257 - 475	14085	Trp-1 to Gly-7.	L0748: 4, S0052: 1 and S0428: 1.
HNGGQ65	576249	4334	1 - 147	14086		S0052: 2
HNGGQ89	577327	4335	56 - 337	14087	Arg-10 to Pro-18, Pro-38 to Asp-53.	S0052: 2 and S0428: 2.
HNGGR01	916753	4336	167 - 364	14088	Leu-49 to Asn-54.	L0748: 3, L0766: 1, S0052: 1, L0751: 1 and H0445: 1.
HNGGR10	964815	4337	121 - 255	14089		S0052: 3
HNGGR17	576250	4338	44 - 229	14090		S0052: 2
HNGGR43	576246	4339	214 - 447	14091	Gly-14 to His-23, Trp-40 to Ser-53.	S0052: 2
HNGGR74	765698	4340	8 - 82	14092		AR089: 1, AR061: 0
HNGGS09	970861	4341	1 - 156	14093	Pro-4 to Gly-14.	S0052: 3
HNGGS26	825369	4342	54 - 353	14094	Tyr-1 to Asp-6, Thr-13 to Val-27.	S0052: 6
HNGGS33	576305	4343	217 - 423	14095	Glu-8 to Gly-14, Thr-40 to Asn-53.	S0052: 2
HNGGS41	576308	4344	3 - 77	14096		S0052: 2
HNGGS66	576312	4345	64 - 192	14097	Pro-11 to Pro-16, Arg-34 to Glu-39.	S0052: 2
HNGGS67	751781	4346	2 - 112	14098		S0052: 3
HNGGS73	576740	4347	57 - 200	14099	Ser-16 to Ser-26.	S0052: 3
HNGGS78	576311	4348	1 - 183	14100	Gly-1 to Asn-25.	S0052: 2
HNGGT44	576297	4349	143 - 325	14101		S0052: 2
HNGGT46	719127	4350	46 - 288	14102		S0052: 2
HNGGT55	576302	4351	75 - 314	14103	Cys-11 to Ser-17.	S0052: 2
HNGGT57	576301	4352	1 - 249	14104		S0052: 2
HNGGT58	576299	4353	2 - 376	14105	Tyr-12 to Gly-22.	S0052: 4
HNGGT62	725750	4354	3 - 110	14106	Pro-10 to Cys-16, Pro-27 to Asn-33.	S0052: 2
HNGGV07	953549	4355	54 - 194	14107		S0052: 2
HNGGV55	576313	4356	1 - 300	14108	Pro-7 to Val-16, Ala-42 to Gly-47, Tyr-72 to Pro-82.	S0052: 2

HNGGV70	781247	4357	178 - 363	14109	Tyr-4 to Ser-11.	S0052: 2, H0521: 1 and H0543: 1.	
HNGGV95	795920	4358	216 - 437	14110	Pro-7 to Arg-14.	S0052: 2	
HNGGX46	868071	4359	3 - 278	14111		S0052: 2	
HNGGX49	860551	4360	128 - 331	14112		S0052: 2	
HNGGX91	576188	4361	71 - 274	14113		S0052: 2	
HNGGX93	576193	4362	1 - 276	14114	Pro-2 to Leu-7, Pro-25 to Cys-30, Gly-42 to Glu-49.	S0052: 2	
HNGGX95	576222	4363	2 - 292	14115		S0052: 2	
HNGHA08	953539	4364.	2 - 229	14116	Lys-38 to Arg-43, Thr-70 to Ser-75.	S0052: 2	
HNGHA10	860553	4365	243 - 467	14117	Arg-37 to Thr-48.	S0052: 1 and S0428: 1.	
HNGHA47	576213	4366	2 - 295	14118	Cys-20 to Ser-31, Arg-50 to Ser-58.	S0052: 2	
HNGHA70	576300	4367	161 - 292	14119	Ser-22 to Ala-30, Val-34 to Trp-41.	S0052: 2	
HNGHA77	772279	4368	2 - 217	14120	Ala-15 to Leu-20, His-26 to Leu-33, Cys-35 to Thr-46.	S0052: 2	
HNGHB07	860552	4369	73 - 384	14121	Arg-21 to Asn-26.	S0052: 2	
HNGHB31	576306	4370	17 - 322	14122	Pro-22 to Ser-29, Thr-51 to Gly-61, Gly-76 to His-87.	S0052: 2	
HNGHB33	506261	4371	15 - 92	14123	Gly-13 to Pro-22.	S0052: 2	
HNGHB48	463007	4372	306 - 548	14124		S0052: 3	
HNGHB55	733509	4373	308 - 475	14125	Asn-6 to Thr-19.	S0052: 4	
HNGHB80	576769	4374	1 - 306	14126	Gly-1 to Gly-6.	S0052: 2	
HNGHB91	576215	4375	158 - 529	14127	Asn-69 to Glu-81, Lys-104 to Ser-110.	S0052: 2	
HNGHD04	932099	4376	1 - 339	14128	Ala-102 to Pro-107.	S0052: 2	
HNGHD09	860544	4377	29 - 211	14129	Glu-2 to Pro-14, Ala-29 to Thr-38, Glu-45 to Gly-51.	S0052: 2	
HNGHD22	576314	4378	26 - 223	14130	Pro-14 to Cys-20, Asn-22 to Leu-31.	S0052: 2	

HNGHD25	506262	4379	61 - 318	14131	Phe-1 to Ser-6, Gln-8 to Gln-20, Leu-54 to Ala-60.	S0052: 2
HNGHD59	836226	4380	82 - 357	14132		S0052: 2
HNGHD67	576317	4381	321 - 443	14133		S0052: 3
HNGHE07	953540	4382	71 - 184	14134	Arg-24 to Gly-29.	S0052: 2
HNGHE17	576209	4383	64 - 180	14135		S0052: 3
HNGHE52	576197	4384	41 - 280	14136		S0052: 2
HNGHE56	577124	4385	169 - 357	14137	Pro-7 to Gly-14, Pro-28 to Gln-34.	S0052: 2
HNGHE62	576202	4386	31 - 279	14138		S0052: 2
HNGHE69	753107	4387	232 - 516	14139	Gly-21 to Ile-32, Lys-34 to Trp-41.	S0052: 2
HNGHE95	779951	4388	2 - 157	14140		S0052: 5
HNGHG15	971736	4389	1 - 177	14141	Gly-1 to Ser-12, Pro-21 to Ser-27.	S0052: 2
HNGHG22	577414	4390	129 - 263	14142	Lys-7 to Gly-14, Phe-26 to Gly-33.	S0052: 2
HNGHG56	576230	4391	147 - 260	14143	Pro-11 to Gly-16.	S0052: 2
HNGHG68	576232	4392	216 - 344	14144	Gly-2 to Pro-11, Ala-27 to Leu-36, Pro-38 to Trp-43.	S0052: 2
HNGHG71	576218	4393	1 - 183	14145	Gly-1 to Gly-9, Tyr-14 to Ser-20.	S0052: 2
HNGH26	924570	4394	1 - 384	14146	Gly-1 to Lys-6, Leu-10 to Pro-20.	S0052: 2
HNGHK13	577354	4395	130 - 348	14147	Lys-1 to Gln-35.	S0052: 2 and S0428: 1.
HNGHK42	582685	4396	26 - 211	14148		S0052: 2
HNGHK44	576208	4397	39 - 164	14149		S0052: 2
HNGHK46	576205	4398	39 - 173	14150	Gln-26 to Arg-34, Glu-40 to Arg-45.	S0052: 2
HNGHK48	576206	4399	182 - 319	14151		S0052: 2
HNGHK50	576195	4400	230 - 376	14152	Asp-1 to Lys-13.	S0052: 2
HNGHK53	576191	4401	3 - 143	14153	His-1 to Leu-6, Gln-23 to Thr-42.	S0052: 2

HNGHK68	576207	4402	2 - 205	14154	Ala-1 to Asn-20.	S0052: 3	
HNGHK77	772277	4403	144 - 494	14155	Lys-11 to Thr-23, Gln-40 to Ile-47.	S0052: 1 and S0428: 1.	
HNGHL10	964814	4404	3 - 242	14156	Gln-45 to Leu-76.	S0052: 2	
HNGHL20	973969	4405	108 - 410	14157	Arg-2 to Gly-20, Pro-23 to Pro-33, Trp-41 to Gly-48, Cys-74 to Ser-79, Asn-84 to Gly-89.	S0052: 2	
HNGHL22	576326	4406	160 - 246	14158	Lys-17 to Arg-24.	S0052: 3, L0752: 2, S0114: 1, L0662: 1 and L0547: 1.	
HNGHL51	576223	4407	232 - 2	14159		S0052: 2	
HNGHL52	576226	4408	38 - 358	14160		S0052: 2	
HNGHL65	576320	4409	2 - 187	14161		S0052: 2	
HNGHL76	506269	4410	1 - 159	14162	Pro-38 to Leu-48.	S0052: 3	
HNGHL77	772283	4411	163 - 306	14163		S0052: 2	
HNGHM33	576741	4412	67 - 315	14164	Ser-1 to Asp-10, Asn-29 to Ser-34, Gln-60 to Lys-77.	S0052: 2	
HNGHM36	576325	4413	2 - 244	14165	Pro-14 to Arg-20.	S0052: 2	
HNGHM51	713805	4414	3 - 281	14166	Thr-47 to Gly-56, Thr-71 to Ser-77, Arg-85 to Arg-90.	S0052: 2	
HNGHN22	421742	4415	2 - 226	14167	Ala-69 to Ser-75.	S0052: 2	
HNGHN40	576165	4416	70 - 255	14168	Arg-1 to Gln-21.	S0052: 2	
HNGHN42	576111	4417	16 - 249	14169	Asp-19 to Leu-30.	S0052: 2	
HNGHN52	576681	4418	61 - 354	14170		S0052: 2	
HNGHN56	733881	4419	198 - 428	14171	Thr-31 to Phe-43.	S0052: 2	
HNGHN70	576108	4420	91 - 297	14172		S0052: 2	
HNGHN75	576110	4421	22 - 237	14173	Met-5 to Gln-19, Gly-21 to Leu-29.	S0052: 2	
HNGHN76	576170	4422	2 - 232	14174		S0052: 2	
HNGHN86	785566	4423	216 - 1	14175		S0052: 2	
HNGHN93	506259	4424	110 - 283	14176	Pro-24 to Ser-29, Asn-32 to Ser-47, His-53 to Pro-58.	S0052: 3	



HNGHN94	970856	4425	1 - 150	14177	Pro-26 to His-33, Pro-35 to Gly-48.	S0052: 2	
HNGHN95	576127	4426	175 - 438	14178	Ser-69 to Gly-75.	S0052: 2	
HNGHO02	970373	4427	40 - 246	14179		S0052: 2	
HNGHO10	964804	4428	118 - 318	14180	Pro-22 to Pro-28.	S0052: 2	
HNGHO15	576168	4429	1 - 192	14181	Gln-41 to Thr-55.	S0052: 3	
HNGHO26	420281	4430	74 - 241	14182		S0052: 2	
HNGHO28	576173	4431	79 - 375	14183	Arg-4 to Lys-11.	S0052: 3	
HNGHO32	575735	4432	148 - 333	14184		S0052: 2	
HNGHO36	576142	4433	26 - 328	14185	Lys-19 to Thr-27, Pro-79 to Ser-86.	S0052: 4	
HNGHO62	840278	4434	46 - 324	14186	Ser-19 to Met-25.	S0052: 2	
HNGHO66	576174	4435	125 - 349	14187	Ser-8 to Trp-14.	S0052: 2	
HNGHP28	576178	4436	93 - 245	14188	Pro-27 to Lys-32, Arg-43 to Ile-50.	S0052: 2	
HNGHP66	576136	4437	20 - 139	14189		S0052: 2	
HNGHP74	577357	4438	3 - 179	14190		S0052: 2	
HNGHP91	576053	4439	112 - 237	14191		S0052: 2	
HNGHP95	577335	4440	262 - 426	14192	Asp-22 to Thr-27.	S0052: 2	
HNGHQ27	683507	4441	156 - 272	14193		S0212: 1 and S0052: 1.	
HNGHQ43	576262	4442	51 - 188	14194	Pro-21 to Leu-28.	S0052: 2	
HNGHQ55	576144	4443	1 - 180	14195	Glu-18 to Arg-28.	S0052: 3	
HNGHQ72	576105	4444	1 - 276	14196	Leu-16 to Gly-23.	S0052: 3	123620, 151410, 600850
HNGHQ76	770126	4445	18 - 140	14197	Asn-14 to Lys-22.	S0052: 3	
HNGHQ96	723008	4446	1 - 273	14198	Lys-59 to Arg-64.	S0052: 2	
HNGHR04	576196	4447	210 - 434	14199	Ser-31 to Pro-36, Arg-44 to Arg-55.	S0052: 3	
HNGHR79	576199	4448	152 - 364	14200		S0052: 2	
HNGHR83	576210	4449	154 - 438	14201	His-1 to Cys-9, Gln-34 to Lys-46, Val-50 to Lys-62, Phe-64 to Lys-70.	S0052: 3	
HNGHT06	935706	4450	3 - 254	14202		S0052: 2	
HNGHT92	576149	4451	95 - 247	14203	Arg-18 to Gly-49.	S0052: 2	

HNGHY07	953531	4452	8 - 211	14204	Ile-9 to His-25.	S0052: 2
HNGHY31	577563	4453	304 - 438	14205	Ser-32 to Phe-37.	S0052: 3
HNGHY54	730769	4454	180 - 275	14206	Pro-7 to Asn-12.	H0318: 1 and S0052: 1.
HNGHY78	576139	4455	18 - 185	14207		S0052: 3
HNGHZ17	860532	4456	30 - 371	14208	Glu-17 to Ser-24.	S0052: 2 and H0656: 1.
HNGHZ48	576181	4457	3 - 149	14209		S0052: 2
HNGHZ51	716649	4458	1 - 147	14210	His-10 to Glu-16, Phe-18 to Asp-23.	S0052: 2
HNGIA19	576269	4459	117 - 323	14211		S0052: 2
HNGIA40	576155	4460	56 - 268	14212	Lys-39 to Pro-45.	S0052: 2
HNGIA66	678887	4461	89 - 265	14213	Trp-5 to Gly-18, Ser-29 to Ser-42.	S0052: 3 and S0428: 1.
HNGIC34	934280	4462	138 - 242	14214	Asn-23 to Lys-34.	S0052: 1 and S0428: 1.
HNGIC67	576177	4463	1 - 309	14215	Pro-28 to Ser-36.	S0052: 3
HNGID03	921946	4464	60 - 182	14216		S0052: 2 and S0053: 1.
HNGID11	967226	4465	127 - 351	14217		S0052: 2
HNGID15	660299	4466	1 - 444	14218	Pro-7 to Ser-12, Phe-90 to Glu-96.	S0052: 1 and S0053: 1.
HNGID16	576114	4467	112 - 264	14219	Val-1 to Trp-11.	S0052: 2
HNGID33	868069	4468	123 - 1	14220		S0052: 2
HNGID67	751688	4469	88 - 267	14221		S0052: 1 and S0053: 1.
HNGID78	576117	4470	34 - 399	14222	Leu-17 to Leu-24, Tyr-26 to Trp-39, Arg-47 to His-58, Ala-69 to Ile-76.	S0052: 2
HNGID80	576120	4471	66 - 200	14223	Lys-33 to Gly-40.	S0052: 2
HNGID89	577358	4472	54 - 203	14224	Pro-13 to Glu-22.	S0052: 2
HNGID91	577189	4473	221 - 361	14225	Arg-40 to Pro-46.	S0052: 1 and S0053: 1.
HNGIH02	920362	4474	2 - 97	14226		S0052: 2
HNGIH56	576122	4475	2 - 226	14227	Ala-1 to Ser-7.	S0052: 2
HNGIH94	576123	4476	3 - 152	14228	Thr-18 to Leu-23, Asp-42 to Cys-48.	S0052: 2
HNGIIB6	576154	4477	1 - 78	14229		S0052: 2
HNGIIB7	576156	4478	1 - 117	14230	Arg-21 to Pro-28, Lys-31 to Trp-37.	S0052: 2

HNGII50	915340	4479	3 - 158	14231	Asn-6 to Thr-16.	S0052: 2	
HNGII74	576158	4480	149 - 367	14232	Trp-22 to Gly-28, Arg-46 to Ser-52.	S0052: 2	
HNGII76	576153	4481	3 - 113	14233	Ser-30 to Gln-37.	S0052: 2	
HNGII85	576102	4482	2 - 142	14234	Ala-1 to Ala-13, Val-17 to Ile-27.	S0052: 2 and S0053: 1.	
HNGII01	916748	4483	67 - 168	14235	Ser-19 to Lys-26.	S0052: 1 and S0428: 1.	
HNGII05	925597	4484	59 - 262	14236	Gln-16 to Asn-22.	S0052: 2	
HNGII11	964809	4485	73 - 258	14237	Pro-5 to Ser-11.	S0052: 3	
HNGII59	860526	4486	2 - 223	14238	Lys-17 to Tyr-23.	S0052: 3	
HNGII66	576224	4487	1 - 141	14239	Cys-13 to Ile-18.	S0052: 2	
HNGII67	506355	4488	163 - 306	14240		S0052: 3	
HNGII96	779901	4489	122 - 448	14241	Pro-10 to Pro-31.	S0052: 3	
HNGIK41	712362	4490	132 - 218	14242	His-1 to Arg-8, Gly-24 to Gly-38, Gln-41 to Trp-47.	S0052: 3	
HNGIK42	713817	4491	3 - 230	14243		S0052: 2	
HNGIK77	772230	4492	3 - 149	14244	Ser-13 to Val-27.	S0052: 2	
HNGIL27	839952	4493	291 - 434	14245	Lys-1 to Tyr-7, Arg-43 to Gln-48.	S0052: 1 and H0422: 1.	
HNGIL43	715328	4494	168 - 332	14246	Leu-6 to Pro-11, Leu-16 to Trp-23, Lys-35 to Leu-42.	S0052: 2	
HNGIM04	615308	4495	30 - 215	14247	Pro-41 to His-53.	H0083: 1 and S0052: 1.	
HNGIM46	653221	4496	135 - 254	14248	Arg-1 to Leu-21.	S0052: 2	
HNGIM76	770078	4497	2 - 268	14249		S0052: 2	
HNGIM90	788715	4498	57 - 233	14250	Gln-19 to Ala-34, Ser-41 to Lys-48, Ser-53 to Lys-59.	S0052: 3	
HNGIM92	783495	4499	55 - 216	14251	Tyr-1 to Lys-8, Phe-11 to Asp-16.	S0052: 1 and H0423: 1.	
HNGINI1	964991	4500	219 - 521	14252		S0052: 1 and S0428: 1.	
HNGINI8	666515	4501	3 - 254	14253	His-47 to Pro-52, Arg-58 to Gly-67.	S0052: 2	

HNGIN28	860521	4502	123 - 290	14254	Gln-20 to Arg-25.	S0052: 1 and S0216: 1.	
HNGIO15	660320	4503	159 - 404	14255	Glu-1 to Thr-8, Arg-15 to Asp-26.	S0052: 3	
HNGIO77	576857	4504	253 - 378	14256			
HNGIP30	577338	4505	3 - 242	14257	Glu-2 to Gln-18, Gly-50 to Ala-55.	S0052: 2 and H0341: 1. S0052: 2, L0663: 1, S0053: 1 and H0445: 1.	
HNGIP39	840215	4506	2 - 352	14258	Glu-52 to Ser-60.	S0052: 1 and S0428: 1.	
HNGIP42	860518	4507	175 - 366	14259	Ile-42 to Gly-47.	S0052: 1 and S0428: 1.	
HNGIP72	575752	4508	46 - 156	14260		S0052: 3	
HNGIQ28	860510	4509	144 - 299	14261		S0052: 2	
HNGIQ43	715524	4510	166 - 417	14262	Gly-15 to Arg-20.	S0052: 2	
HNGIQ48	720944	4511	3 - 185	14263	His-1 to Gln-6, Gly-19 to Ser-24, Ile-28 to Pro-40.	S0052: 2	
HNGIQ66	506352	4512	1 - 105	14264	Gly-1 to Lys-14.	S0052: 2	
HNGIR34	719088	4513	236 - 349	14265		S0052: 2	
HNGIR92	524799	4514	82 - 243	14266	Arg-24 to Tyr-34.	S0052: 2	
HNGIS13	575753	4515	93 - 308	14267	His-11 to Ser-22, Leu-35 to Thr-41, Gln-45 to Gln-50.	S0052: 2	
HNGIS30	575758	4516	59 - 202	14268		S0052: 2	
HNGIT70	953890	4517	1 - 237	14269		S0052: 2	
HNGIU55	576804	4518	1 - 171	14270	Asn-39 to His-45. Leu-9 to Thr-14.	S0052: 1 and S0053: 1. L0803: 6, L0756: 5, L0731: 5, L0794: 3, L0755: 3.	
HNGIU78	666261	4519	799 - 578	14271	Asn-69 to Gln-74.	L0774: 2, L0805: 2, S0052: 2, L0746: 2, L0777: 2, L0598: 1, L0646: 1, L0766: 1, L0606: 1, L0661: 1, L0367: 1, L0666: 1, H0522: 1, L0742: 1, L0748: 1, L0740: 1, L0754: 1, L0745: 1, L0749: 1, L0779: 1, L0758: 1 and L0608: 1.	
HNGIV01	913687	4520	116 - 310	14272		H0580: 1 and S0052: 1.	
HNGIV24	766775	4521	1 - 210	14273		S0052: 1 and S0216: 1.	

HNGIV81	777970	4522	190 - 357	14274	Glu-19 to Thr-24, Thr-51 to Lys-56.	S0052: 1 and S0428: 1.	
HNGIW70	883086	4523	131 - 577	14275	Lys-5 to Lys-56.	S0052: 2 and S0428: 1.	
HNGIW73	764456	4524	63 - 290	14276	Gly-7 to Gly-12.	S0052: 1 and S0216: 1.	
HNGIY22	674660	4525	37 - 171	14277		S0052: 2	
HNGIY36	707323	4526	162 - 1	14278		S0052: 2	
HNGIY56	868065	4527	3 - 149	14279		S0052: 2	
HNGIY60	740404	4528	1 - 162	14280	Gly-1 to Lys-11, Gly-13 to Gly-25.	S0052: 2	8p23.1
HNGIY79	775229	4529	3 - 530	14281	Lys-31 to Gly-37, Pro-56 to Phe-65, Leu-77 to Asp-83, Pro-91 to Lys-97.	AR061: 10, AR089: 5 T0042: 1, S0052: 1, H0521: 1 and L0439: 1.	
HNGIY92	792737	4530	35 - 334	14282	Thr-65 to Trp-80.	S0052: 1 and S0428: 1.	
HNGIY26	670962	4531	261 - 356	14283	Ser-27 to Tyr-32.	S0052: 2 and H0402: 1.	
HNGIY56	733439	4532	186 - 305	14284		S0052: 2	
HNGIY69	757599	4533	218 - 436	14285	Arg-15 to Asp-24.	S0052: 2	
HNGIY82	668704	4534	147 - 371	14286	Met-67 to Lys-72.	S0052: 3, L0809: 1 and L0789: 1.	
HNGIA15	787570	4535	763 - 927	14287		S0052: 1 and S0216: 1.	
HNGIA18	666512	4536	157 - 306	14288		S0052: 2	
HNGIB34	936011	4537	257 - 436	14289	Arg-13 to Gly-18.	L0476: 1, S0052: 1 and S0053: 1.	
HNGIB52	724406	4538	203 - 445	14290	Pro-2 to Arg-7.	S0052: 1 and S0053: 1.	
HNGIB68	753060	4539	58 - 285	14291		S0052: 2	
HNGIC60	723380	4540	183 - 416	14292	Val-2 to Gly-9.	S0052: 2	
HNGIC66	786924	4541	2 - 211	14293	Gly-11 to Gly-24.		
HNGIC76	739500	4542	1 - 132	14294	Pro-9 to Leu-16, Ala-54 to Gly-62.	S0052: 2	
HNGID15	660312	4543	1 - 93	14295		S0052: 2	
HNGID61	774154	4544	375 - 569	14296	His-22 to Leu-27, Pro-43 to Gly-64.	S0052: 1 and S0428: 1.	
HNGID71	760397	4545	24 - 371	14297	Gly-36 to Asp-42.	S0052: 1 and S0428: 1.	19p13.3 108725, 120700, 133171, 136836.

					Leu-81 to Thr-91, Pro-93 to Gly-99, Ser-108 to Ala-114.				145981, 147141, 164953, 188070, 600957, 601238, 601846, 602216, 602477
HNGJID76	670948	4546	20 - 259	14298					
HNGJIE16	661976	4547	3 - 212	14299					
HNGJIE33	795219	4548	134 - 286	14300					
HNGJIE40	960003	4549	74 - 304	14301	Asn-1 to Gly-7, Pro-21 to Leu-26.				
HNGJIE56	669732	4550	222 - 374	14302					
HNGJIF26	666504	4551	2 - 241	14303	Leu-38 to Ala-43.				
HNGJIF65	698487	4552	401 - 589	14304					
HNGJIF73	683440	4553	217 - 408	14305					
HNGJIF79	775221	4554	1 - 156	14306					
HNGJIG15	660308	4555	121 - 354	14307	Pro-44 to Leu-55, Arg-60 to Ser-66, Arg-69 to Trp-78.				
HNGJIG37	708703	4556	6 - 146	14308	Ser-1 to His-6.				
HNGJIG72	970797	4557	53 - 163	14309	Thr-16 to Tyr-24, Glu-29 to Gln-34.				
HNGJIG89	778294	4558	85 - 252	14310					
HNGJH09	415566	4559	39 - 179	14311					
	860378	9587	118 - 315	19339	Glu-52 to Lys-57.				
HNGJH11	860350	4560	1 - 222	14312	Gly-1 to Val-13.				
					Ser-34 to Leu-39.				
HNGJH35	952237	4561	3 - 167	14313	Ser-14 to Glu-20.				
HNGJH50	666843	4562	134 - 307	14314					
HNGJH96	953648	4563	1 - 177	14315					
HNGJI29	690667	4564	197 - 385	14316	Trp-1 to Asn-9.				
HNGJH35	707328	4565	2 - 223	14317	Glu-16 to Arg-29, Ser-41 to Gly-48.				
HNGJI42	465160	4566	158 - 418	14318					
HNGJI54	465159	4567	1 - 381	14319	Glu-43 to Ala-49.				

HNGJ171	760393	4568	48 - 308	14320	Cys-57 to Ser-62, Arg-79 to Thr-86, Pro-23 to Arg-32, Arg-38 to Gly-49.	S0052: 2	
HNGJ177	772215	4569	94 - 357	14321	Ala-12 to Asn-17, Thr-23 to Gln-33.	S0052: 2	
HNGJ183	781213	4570	221 - 376	14322	Arg-7 to Pro-21, Pro-40 to Gln-47.	S0052: 3	
HNGJ122	597096	4571	1 - 285	14323	Thr-2 to Cys-13, Asp-24 to Gln-32.	S0052: 1, S0428: 1 and L0599: 1.	
HNGJ151	725702	4572	124 - 53	14324	Ala-2 to Thr-18, Arg-23 to Gln-29.	S0052: 2	
HNGJ104	615288	4573	76 - 222	14325	Glu-1 to Ser-9.	S0052: 2	
HNGJ106	935548	4574	2 - 163	14326	Cys-36 to Ser-41, Thr-48 to Arg-58.	S0052: 2	
HNGJ112	970686	4575	132 - 227	14327	Lys-3 to Val-9, Cys-24 to Phe-30, Pro-46 to Gln-57.	S0002: 1 and S0052: 1.	
HNGJ123	707327	4576	3 - 83	14328	Met-38 to Ala-47.	S0052: 2	
HNGJ129	663954	4577	1 - 174	14329	His-21 to Arg-26, Gln-1 to Ile-9.	S0052: 2	
HNGJ142	713810	4578	14 - 223	14330	His-21 to Arg-26, Gln-1 to Ile-9.	S0052: 1 and S0428: 1.	
HNGJ150	860196	4579	69 - 398	14331	His-16 to Lys-48.	S0052: 3	
HNGJ154	730713	4580	238 - 101	14332	His-1 to Trp-12, Ser-29 to Ile-34.	S0052: 2	
HNGJ158	736080	4581	122 - 355	14333	Ser-1 to Ser-8, Asn-44 to Ala-54.	S0052: 3	
HNGJ171	739323	4582	87 - 290	14334	Gly-1 to Ser-7, Pro-12 to Gln-20.	S0052: 2	
HNGJ177	732737	4583	191 - 319	14335	Ser-47 to Asp-52.	S0052: 3 and H0444: 1.	
HNGJ189	772218	4584	2 - 265	14336			
HNGJ116	661977	4585	177 - 359	14337			
HNGJ126	681819	4586	1 - 369	14338			
HNGJ127	725295	4587	1 - 264	14339		L0639: 1, L0659: 1, L0517: 1, S0052: 1 and S0216: 1.	
HNGJ160	462981	4588	164 - 439	14340		S0052: 2	

HNGJL73	783518	4589	69 - 311	14341	Asn-1 to Leu-8.	S0052: 2	19q13.3-q13.4	1113900, 126340,
HNGJL76	793537	4590	69 - 608	14342	Asp-36 to Arg-44.	S0052: 1, S0053: 1 and L0361: 1.		126391, 130410,
								134790, 138570,
								160900, 173850,
								191044, 258501,
								600040, 600138,
								602225, 602225
HNGJM20	964800	4591	2 - 157	14343		S0052: 2		
HNGJM35	707324	4592	3 - 116	14344	Arg-18 to Leu-25.	S0052: 2 and L0361: 1.		
HNGJM82	967328	4593	432 - 19	14345		S0134: 1, L0769: 1, L0794: 1, S0052: 1, S0428: 1, L0753: 1, L0592: 1 and L0599: 1.		
HNGJO10	964678	4594	140 - 301	14346	Gly-1 to Glu-6.	S0052: 2		
HNGJO35	707329	4595	2 - 403	14347	Arg-39 to Gly-49.	S0052: 2		
					Pro-51 to Thr-56.	S0052: 2		
HNGJO45	717069	4596	322 - 408	14348	Ser-28 to Ser-33.	S0052: 1 and S0053: 1.		
HNGJO73	668997	4597	208 - 360	14349	Gly-39 to Thr-46.	H0318: 1 and S0052: 1.		
HNGJP03	860363	4598	95 - 376	14350	Cys-13 to Arg-22.	S0052: 2		
					Pro-29 to Lys-41.			
HNGJP10	964668	4599	72 - 392	14351	Gly-12 to Lys-22.	S0052: 1 and S0428: 1.		
					Asn-29 to Ser-34.			
HNGJP80	766278	4600	118 - 429	14352	Pro-10 to Glu-15.	H0305: 1, S0052: 1 and S0428: 1.		
HNGJQ14	881542	4601	2 - 370	14353		S0052: 1 and S0053: 1.		
HNGJQ23	789764	4602	192 - 314	14354	Gly-12 to Pro-18.	S0052: 1 and S0216: 1.		
HNGJQ25	924652	4603	3 - 170	14355		S0052: 2		
HNGJQ35	707326	4604	146 - 388	14356		S0052: 2		
HNGJQ01	916555	4605	203 - 373	14357		H0090: 1 and S0052: 1.		
HNGJS24	677235	4606	178 - 333	14358		S0052: 2		
HNGJS45	720746	4607	63 - 1	14359		S0052: 2		
HNGJS53	728258	4608	256 - 444	14360		S0052: 2		
HNGJS64	746606	4609	16 - 357	14361	Ser-2 to Arg-8.	S0052: 2		
					Gly-14 to Trp-24,			
					Thr-28 to Glu-33,			



HNGJIS91	920755	4610	3 - 221	14362	Gly-40 to Phe-58, Gly-80 to Arg-94.		
					His-1 to Asp-6.	S0052: 2	
HNGJIT36	888329	4611	122 - 352	14363	Ile-67 to Trp-72.		
HNGJIT72	775502	4612	1 - 288	14364	Asn-5 to Ser-12.	S0052: 2	
					Thr-28 to Leu-33.	S0052: 1 and S0428: 1.	
					Trp-61 to Pro-67.		
HNGJIT93	792338	4613	158 - 343	14365		S0052: 2	
HNGJIT95	953418	4614	120 - 254	14366	Thr-8 to Asp-15.	S0052: 2	
HNGJU36	708122	4615	651 - 457	14367		S0052: 3 and H0521: 1.	
HNGJU50	724416	4616	272 - 412	14368		S0052: 2	
HNGJU51	725703	4617	2 - 109	14369		S0052: 2	
HNGJU78	860347	4618	166 - 375	14370	Glu-21 to Asn-27.	S0052: 2	
HNGJV04	615283	4619	18 - 224	14371	Gln-28 to Gly-42.	S0052: 2	
HNGJV10	964672	4620	205 - 378	14372	Ser-5 to Val-10.	S0052: 2	
					Ala-27 to Gly-33.		
HNGJIV91	790213	4621	144 - 1	14373		S0052: 1 and S0216: 1.	
HNGKA62	876593	4622	97 - 345	14374	Arg-1 to Ser-6.	H0556: 1, S0428: 1, L0589: 1 and H0423: 1.	
						S0428: 2	
HNGKB11	966119	4623	3 - 311	14375	Gly-2 to Pro-17.		
					Pro-31 to Gly-48.		
HNGKB25	944424	4624	89 - 445	14376	Trp-1 to Glu-8.	AR061: 4, AR089: 4	
					Thr-16 to Trp-22.	S0114: 1, H0376: 1, S0428: 1 and L0748: 1.	
					Ser-67 to Ser-75.		
HNGKB78	971110	4625	98 - 322	14377	Lys-13 to Thr-18.	S0428: 1, S0053: 1 and S0216: 1.	
					Ser-24 to Ser-29.		
HNGKB93	791760	4626	63 - 305	14378	Arg-6 to Gly-21.	H0087: 1 and S0428: 1.	
					Thr-34 to Pro-39.		
					Pro-43 to Pro-50.		
HNGKD55	860343	4627	359 - 547	14379	Met-40 to Ser-45.	S0428: 2	
HNGKD94	793414	4628	164 - 364	14380		H0271: 1, S0052: 1 and S0428: 1.	
						S0428: 2	
HNGKE05	860320	4629	297 - 497	14381	Arg-6 to Gly-12.		
					Arg-36 to Arg-47.		
HNGKE07	952221	4630	2 - 361	14382	Lys-56 to Ser-62.	S0428: 2, S0053: 1 and S0216: 1.	113900, 126340, 126391, 130410.

HNGKE52	812714	4631	304 - 579	14383	Pro-32 to Gln-38, Pro-56 to Leu-66.	S0428: 2	134790, 138570, 160900, 173850, 191044, 258501, 600040, 600138, 602225, 602225
HNGKE73	860312	4632	251 - 631	14384		S0428: 2 and S0052: 1.	
HNGKE89	786257	4633	268 - 420	14385		S0428: 2	
HNGKE91	789685	4634	137 - 274	14386	Glu-29 to Phe-35.	S0428: 2 and S0052: 1.	
HNGKE93	791623	4635	3 - 311	14387	Gly-1 to Pro-7.	H0255: 1 and S0428: 1.	
HNGKF01	915247	4636	59 - 352	14388	Pro-33 to Pro-49, Pro-56 to Pro-63.	S0428: 2	
HNGKF11	965047	4637	6 - 185	14389		S0428: 2 and S0052: 1.	
HNGKF83	780453	4638	1 - 243	14390	His-5 to Gly-15, Phe-22 to Arg-28, Ser-45 to Gly-54, Ser-64 to Lys-71.	S0428: 2	
HNGKG43	958487	4639	287 - 640	14391	Lys-41 to Asn-46, Lys-55 to Thr-61, Ser-77 to Thr-84.	S0428: 1 and S0216: 1.	
HNGKG61	860317	4640	57 - 233	14392	Thr-6 to Gly-17.	S0428: 2 and S0052: 1.	
HNGKH04	926987	4641	318 - 1	14393		S0052: 1 and S0428: 1.	
HNGKI30	860205	4642	20 - 328	14394	Phe-33 to Gly-41, Glu-58 to Lys-63, Arg-78 to Ser-83, Pro-92 to Leu-101.	S0428: 2	109690, 109690, 131400, 138491, 138491, 138491, 154500, 180071, 181460, 222600, 222600, 222600, 234000, 272750, 600807, 601411, 601596, 602089
HNGKI36	784854	4643	3 - 206	14395	Ala-24 to Ser-30, Gln-61 to Gln-68.	S0428: 2	
HNGKI90	787378	4644	2 - 169	14396		S0428: 2	
HNGKI93	791671	4645	42 - 515	14397	Leu-26 to Arg-32.	H0255: 1 and S0428: 1.	

HNGKJ01	915231	4646	55 - 444	14398	Ile-1 to Thr-26, Arg-36 to Ala-42, Glu-61 to Lys-66, Arg-76 to Arg-81, Val-104 to Ile-117, Glu-119 to Gly-127.	S0428: 1 and S0053: 1.
HNGKJ38	806053	4647	57 - 356	14399	Glu-24 to Pro-31.	S0428: 2, H0264: 1, S0052: 1 and S0053: 1.
	974222	9588	426 - 184	19340	Ser-26 to His-31, Ala-65 to Glu-71.	
HNGKJ51	883072	4648	1 - 315	14400	Asp-1 to Arg-7.	S0428: 2
HNGKK35	806051	4649	49 - 285	14401	Pro-72 to Arg-79.	S0428: 2
HNGKO11	966093	4650	123 - 1	14402		S0428: 2
HNGKP29	860305	4651	3 - 203	14403	Gln-5 to Pro-10.	S0052: 1 and S0428: 1.
HNGKS06	974356	4652	148 - 372	14404		H0069: 1 and S0428: 1.
HNGKT08	958311	4653	175 - 369	14405		S0052: 1 and S0428: 1.
HNGKT69	860302	4654	159 - 374	14406		S0052: 1 and S0428: 1.
HNGKL04	976948	4655	149 - 289	14407		S0052: 1 and S0428: 1.
HNGKV01	915218	4656	65 - 280	14408		S0052: 1 and S0428: 1.
					Glu-1 to Lys-13, Phe-14 to Gln-22, Gly-37 to Cys-43, Met-47 to Lys-53, Glu-56 to Ser-62.	
HNGLA54	860206	4657	1 - 153	14409	Pro-23 to Cys-34.	S0428: 2
HNGLC01	915288	4658	346 - 579	14410		S0052: 1 and S0428: 1.
HNGLC46	775300	4659	63 - 257	14411	Pro-2 to Gly-20.	S0052: 1 and S0428: 1.
HNGLD34	830026	4660	97 - 210	14412	Pro-14 to Gly-23.	S0428: 2 and L0750: 1.
HNGLE25	860260	4661	2 - 313	14413	Thr-11 to Trp-6, Pro-80 to Ser-88.	S0428: 2
HNGLE52	835972	4662	181 - 396	14414		S0052: 1 and S0428: 1.
HNGLE74	860263	4663	163 - 468	14415	Pro-1 to Asn-6.	S0052: 1 and S0428: 1.
HNGLF03	929269	4664	320 - 472	14416	Glu-1 to Ser-13, Glu-24 to Gly-30.	H0271: 1, S0052: 1 and S0428: 1.
HNGLF08	958312	4665	199 - 465	14417	Ser-11 to Trp-21, Arg-74 to Glu-80.	S0428: 2, S0052: 1 and L0731: 1.
HNGLG06	839088	4666	234 - 689	14418	Asp-73 to Gly-79, Val-107 to Ile-114.	AR061: 7, AR089: 2 H0318: 1, S0144: 1 and

HNGLH72	785570	4667	280 - 453	14419	Met-120 to Tyr-126.	S0428: 1.
HNGLH82	954140	4668	105 - 404	14420	Ser-9 to Ser-25.	S0052: 1 and S0428: 1.
HNGLJ04	954943	4669	332 - 496	14421		S0052: 3 and S0428: 1.
HNGLJ20	806045	4670	78 - 323	14422		S0052: 1 and S0428: 1.
HNGLK13	785685	4671	23 - 238	14423		S0428: 2
HNGLK65	795280	4672	301 - 522	14424		S0052: 1 and S0428: 1.
HNGLK90	795225	4673	234 - 491	14425	Tyr-1 to Cys-9.	S0428: 2
HNGLL03	923028	4674	220 - 420	14426		S0052: 1 and S0428: 1.
HNGLL11	966105	4675	35 - 190	14427		S0052: 1 and S0428: 1.
HNGLL24	859922	4676	330 - 584	14428	Lys-1 to Gly-10, Met-12 to Gln-18, Arg-48 to Pro-61.	S0428: 1 and S0216: 1.
HNGLL31	789193	4677	139 - 288	14429	Glu-29 to Trp-34.	H0179: 1 and S0428: 1.
HNGLL41	845274	4678	734 - 288	14430	Gly-1 to Gly-8.	AR051: 29, AR050: 25, AR054: 17 S0428: 2
HNGLL67	873128	9589	157 - 456	19341	Pro-21 to Tyr-32.	
HNGLL91	860253	4679	46 - 336	14431		S0052: 1 and S0428: 1.
HNGLM06	789743	4680	140 - 421	14432	Ser-12 to Glu-25.	S0428: 3
HNGLM10	919222	4681	36 - 122	14433	Asp-1 to Tyr-8.	S0428: 2
HNGLO10	963504	4682	13 - 285	14434		S0052: 1 and S0428: 1.
HNGLO70	779223	4683	49 - 213	14435	Gly-19 to Leu-30.	S0428: 2
HNGLO80	775504	4684	505 - 741	14436	Arg-6 to Ile-11.	S0052: 1 and S0428: 1.
HNGLO86	780484	4685	138 - 527	14437	Met-11 to Arg-16.	S0428: 2 and L0748: 1.
HNGLO92	924891	4686	73 - 666	14438	Ser-2 to Trp-8. Arg-15 to Ser-25, Pro-41 to Glu-46, Gln-51 to Asn-57, Gly-106 to Ala-113, Pro-124 to Pro-134.	S0052: 1 and S0428: 1.
HNGLR39	835586	4687	434 - 679	14439	Phe-38 to Glu-48.	S0428: 3
HNGLR91	789707	4688	3 - 347	14440	Thr-29 to Ser-41, Lys-54 to Cys-67.	S0052: 1 and S0428: 1.
HNGLS86	784860	4689	259 - 405	14441		S0052: 1 and S0428: 1.

HNGLT67	958777	4690	377 - 547	14442			H0589: 1 and S0428: 1.
HNGLX63	934371	4691	3 - 203	14443			S0428: 2
HNGMA01	915306	4692	251 - 424	14444	Pro-31 to Gly-36, Lys-43 to Lys-49.		S0428: 2
HNGMA49	860244	4693	336 - 94	14445			S0428: 2 and S0052: 1.
HNGMB26	860166	4694	33 - 317	14446	Pro-24 to Gln-29.		S0428: 2
HNGMB33	773752	4695	263 - 541	14447	Ala-5 to Arg-13, Arg-31 to Gly-48, Gly-52 to Thr-58.		S0052: 1 and S0428: 1.
HNGMC51	860243	4696	11 - 454	14448	Asn-1 to Tyr-6.		H0402: 1, S0428: 1 and L0439: 1.
HNGMD03	923041	4697	121 - 372	14449			S0428: 2
HNGMD04	927026	4698	36 - 338	14450	Pro-41 to Leu-47, Thr-50 to Ala-59.		S0428: 2
HNGME93	793483	4699	16 - 252	14451	Ala-12 to Gln-17, Pro-59 to Arg-67.		S0428: 2
HNGMF04	860242	4700	333 - 592	14452	Gln-26 to Lys-36.		S0052: 1 and S0428: 1.
HNGMF11	966114	4701	1 - 159	14453			S0428: 2
HNGMP46	795236	4702	226 - 2	14454			S0428: 2 and H0023: 1.
HNGMF79	772974	4703	66 - 287	14455	Lys-4 to Gly-21, Glu-57 to Thr-62.		S0428: 2
HNGMP94	966091	4704	147 - 389	14456	Pro-34 to Asp-46, Arg-52 to Lys-57.		S0428: 2
HNGMG06	934318	4705	111 - 254	14457			S0428: 2
HNGMG08	958361	4706	18 - 218	14458			S0428: 2
HNGMH80	775503	4707	335 - 487	14459	Pro-31 to Leu-45.		S0114: 1 and S0428: 1.
HNGMH93	791725	4708	232 - 429	14460	Arg-1 to Met-6, Phe-35 to Leu-40, Pro-55 to Arg-66.		S0052: 1 and S0428: 1.
HNGMJ04	923011	4709	284 - 156	14461			S0428: 2
HNGMJ89	786340	4710	107 - 463	14462	Ala-63 to Trp-69.		AR089: 15, AR061: 7 S0428: 2
HNGML07	952224	4711	214 - 453	14463	Ala-1 to Gln-19, Gln-25 to Trp-36, Met-53 to Gly-66.		S0428: 2
HNGML53	860240	4712	86 - 433	14464	Ser-35 to Pro-41.		S0428: 2

HNGMM51	860201	4713	121 - 501	14465	Arg-8 to Ser-13, Ala-31 to Cys-37, Thr-76 to Glu-83, Leu-93 to Arg-99.	S0428: 2	
HNGMM54	933358	4714	2 - 220	14466	Gly-11 to Asp-33.	H0250: 2 and S0428: 1.	
HNGMM87	806036	4715	138 - 437	14467	Asn-10 to Arg-22, Asn-91 to Ser-96.	H0271: 1 and S0428: 1.	
HNGMV73	806000	4716	250 - 519	14468	Glu-1 to Leu-11.	S0428: 2	
HNGMW52	860231	4717	176 - 595	14469	Thr-1 to Ser-7.	S0428: 2	
HNGMW92	790852	4718	226 - 618	14470	Asn-8 to Arg-17, Asn-35 to Tyr-40.	S0052: 1 and S0428: 1.	
HNGMX80	786255	4719	2 - 268	14471	Lys-13 to Tyr-23, Arg-36 to Lys-41.	S0428: 2, H0610: 1, H0271: 1 and S0052: 1.	
HNGMX87	835612	4720	3 - 380	14472	Pro-31 to Asp-58, Ser-77 to Glu-87, Pro-89 to Leu-95.	S0428: 2	
HNGMX91	789680	4721	79 - 309	14473	Ser-1 to Leu-6.	S0052: 1 and S0428: 1.	
HNGNA23	779201	4722	1 - 135	14474	Glu-1 to Ser-20.	S0428: 2	
HNGNB01	915238	4723	9 - 83	14475	Phe-1 to Thr-10.	S0428: 2	
HNGNE65	963425	4724	136 - 561	14476	Val-1 to Gly-6.	S0428: 2	
HNGNF40	861967	4725	1 - 237	14477		H0300: 2 and S0428: 1.	
HNGNG37	847818	4726	333 - 506	14478	Leu-49 to Arg-54.	S0428: 2, L0517: 1 and S0052: 1.	
HNGNH03	922831	4727	117 - 389	14479	Asn-1 to Pro-21, Ser-33 to Tyr-42, Thr-52 to Lys-57, Pro-69 to Tyr-89.	H0556: 1 and S0428: 1.	
HNGNI04	926985	4728	214 - 492	14480	Ser-27 to Glu-38.	S0428: 2	
HNGNI52	781913	4729	146 - 313	14481	Ala-1 to Gly-6, Thr-12 to Thr-19.	S0052: 1, S0428: 1 and S0053: 1.	
HNGNI75	860168	4730	35 - 319	14482	Arg-45 to Glu-50, Thr-62 to Asn-72.	S0428: 2	
HNGNI94	893899	4731	2 - 370	14483	Pro-9 to Ser-14, Ser-46 to Ala-53, Ala-69 to Ala-86, Arg-96 to Pro-108.	S0052: 2 and S0428: 1.	

HNGNM24	841902	4732	67 - 243	14484	Glu-37 to Arg-42	H0057: 1 and S0428: 1.
HNGNO03	860155	4733	269 - 475	14485	Ala-39 to Arg-46	S0428: 2
HNGNR04	926870	4734	229 - 387	14486		S0052: 1 and S0428: 1.
HNGNS10	963470	4735	575 - 733	14487		S0428: 2
HNGNS58	788971	4736	40 - 210	14488		S0052: 1 and S0428: 1.
HNGNS90	787388	4737	283 - 465	14489		S0052: 1 and S0428: 1.
HNGNV80	908167	4738	39 - 389	14490	Pro-40 to Arg-54, Pro-57 to Gly-72, Glu-74 to Ala-81, Pro-89 to His-96, Leu-99 to Glu-104.	S0428: 2
HNGNW04	860199	4739	116 - 253	14491	Arg-22 to Glu-36.	H0486: 1 and S0428: 1.
HNGNW85	783747	4740	3 - 248	14492		H0402: 1 and S0428: 1.
HNGNX37	806018	4741	321 - 539	14493		S0428: 2
HNGNX65	806042	4742	140 - 346	14494	Glu-48 to Cys-54.	S0428: 2 and S0052: 1.
HNGNZ01	860158	4743	261 - 398	14495		S0216: 2 and S0428: 1.
HNGNZ38	790926	4744	110 - 280	14496		S0428: 3 and L0377: 1.
HNGNZ91	839887	4745	88 - 399	14497	Leu-39 to Gly-44.	S0052: 1 and S0428: 1.
HNGOA11	966082	4746	12 - 224	14498		S0052: 1 and S0428: 1.
HNGOA82	779154	4747	285 - 449	14499		S0052: 1 and S0428: 1.
HNGOB95	791700	4748	1 - 144	14500	Glu-18 to Glu-25, Ser-36 to Val-42.	S0428: 2
HNGOD68	790805	4749	43 - 282	14501	Asp-73 to Phe-80.	S0428: 2
HNGOE64	860143	4750	192 - 563	14502		S0428: 3
HNGOF50	796548	4751	140 - 367	14503	Ser-10 to Leu-19.	S0428: 1 and S0053: 1.
HNGOF84	782188	4752	1 - 333	14504	Gly-1 to Gly-9, Thr-57 to Thr-71, Thr-77 to Ser-82.	S0428: 1 and S0216: 1.
HNGOF85	783717	4753	417 - 725	14505		H0402: 1, S0428: 1 and S0053: 1.
HNGOG49	971178	4754	1 - 255	14506		S0052: 1 and S0428: 1.
HNGOH42	958943	4755	337 - 519	14507	Pro-7 to Arg-12.	H0580: 1 and S0428: 1.
HNGOI86	806013	4756	456 - 193	14508	Lys-43 to Thr-58, Asp-77 to Arg-88.	S0428: 2
HNGOI13	921433	4757	85 - 339	14509	His-5 to Asn-16.	S0052: 1 and S0428: 1.

HNGOJ64	860193	4758	2 - 304	14510	Tyr-61 to Gly-71.	S0428: 2	
HNGOK59	789689	4759	108 - 242	14511	Ser-14 to Arg-25.	S0428: 2	
HNGOK86	784813	4760	203 - 442	14512	Pro-22 to Gln-28.	S0116: 1 and S0428: 1.	
HNGOL14	860185	4761	3 - 143	14513		S0052: 1 and S0428: 1.	
HNGOO22	953888	4762	3 - 155	14514		S0052: 1 and S0428: 1.	
HNGOP04	926972	4763	230 - 406	14515		S0428: 2	
HNGOP10	963483	4764	289 - 438	14516	Phe-4 to Thr-10, Pro-23 to Ser-30.	L0521: 2, H0305: 1, S0002: 1, S0428: 1, L0758: 1 and L0759: 1.	
HNGOS22	860176	4765	69 - 314	14517	Pro-8 to Ser-28.	S0134: 1 and S0428: 1.	
HNGOV03	922963	4766	53 - 286	14518	Phe-33 to Leu-39.	S0428: 2	
HNGOV65	971416	4767	2 - 187	14519		S0052: 2 and S0428: 1.	
HNGOW13	926929	4768	2 - 310	14520	Gln-11 to His-23, Glu-25 to Gly-41.	S0428: 2	
HNGOV01	915210	4769	162 - 359	14521	Thr-19 to Cys-27, Val-33 to Gly-39.	S0428: 2	
HNGOV10	915012	4770	3 - 386	14522	Ser-23 to Ala-30, Ala-44 to Ala-54.	H0457: 1 and S0428: 1.	
HNGOZ17	880777	4771	118 - 246	14523		S0052: 1 and S0428: 1.	
HNGPH12	969683	4772	174 - 353	14524		S0428: 2 and S0053: 1.	
HNGPI08	947384	4773	461 - 655	14525	Glu-17 to Gly-23.	S0428: 2 and L0766: 1.	
HNGPI23	855983	4774	250 - 507	14526	Pro-1 to Leu-7, Lys-14 to Trp-22, Leu-24 to Gly-30, Ser-47 to Gly-53, Gln-71 to Leu-86.	H0444: 2 and S0428: 1.	
HNGPI51	805997	4775	136 - 288	14527		S0428: 2	
HNGPI91	959740	4776	177 - 350	14528	Ala-9 to Trp-16.	S0052: 1 and S0428: 1.	
HNGPN01	913782	4777	105 - 413	14529	Ser-17 to Ser-25.	S0428: 2	
HNGPN46	954997	4778	331 - 588	14530	Lys-1 to Asp-7.	S0428: 2	
HNGPP61	860145	4779	119 - 475	14531		S0428: 2	
HNGPR03	949269	4780	3 - 140	14532	Gln-39 to Cys-45.	S0428: 2	
HNGPS10	963469	4781	3 - 239	14533		S0428: 1 and S0216: 1.	
HNHAB29	860141	4782	2 - 145	14534	Arg-16 to Gly-23.	S0053: 2	



HNHAB93	527921	4783	3 - 149	14535	Gly-1 to Gly-9, Glu-24 to Gly-35.	S0053: 2
HNHAF77	527971	4784	7 - 135	14536		S0053: 2
HNHAG50	527815	4785	22 - 180	14537	Gly-10 to Trp-22, Pro-25 to Cys-32, Asp-35 to Ser-43.	S0053: 2
HNHAG51	725898	4786	10 - 174	14538		S0053: 2
HNHAG64	527809	4787	76 - 231	14539		S0053: 2
HNHAAH38	860118	4788	140 - 388	14540	Tyr-34 to Thr-39.	S0053: 2
HNHAAH84	527806	4789	89 - 235	14541	Lys-1 to Trp-10.	S0053: 2
HNHAI11	967668	4790	81 - 377	14542	Glu-37 to Asn-42, Arg-47 to Lys-67.	L0766: 2, S0053: 2 and L0758: 1.
HNHAI15	860128	4791	2 - 58	14543		S0053: 2
HNHAI68	527572	4792	85 - 165	14544		S0053: 2
HNHAI59	703576	4793	274 - 417	14545		S0053: 1 and S0216: 1.
HNHAK83	574391	4794	25 - 219	14546		S0053: 2
HNHAP79	574384	4795	2 - 139	14547		S0053: 2
HNHAW75	515480	4796	240 - 1	14548	Lys-19 to Gln-25, Leu-68 to Gly-73.	S0053: 2
HNHBC30	693318	4797	93 - 230	14549		S0053: 1 and H0423: 1.
HNHBE19	724404	4798	56 - 190	14550		S0053: 2
HNHBM62	574387	4799	1 - 240	14551	Ser-1 to Phe-10, Leu-14 to Ile-19, Ser-41 to Ser-47, Ala-61 to Gly-66.	S0053: 2
HNHBT72	577334	4800	241 - 399	14552	Thr-19 to Ser-27.	S0053: 2
HNHBM22	574305	4801	66 - 272	14553	Arg-1 to Arg-7, Ala-16 to Ser-24.	S0053: 2 and S0216: 1.
HNHBM59	959771	4802	2 - 286	14554	Arg-2 to Gly-11.	S0053: 2
HNHBM80	721688	4803	82 - 240	14555		S0053: 2
HNHBM63	574310	4804	135 - 302	14556		H0271: 1 and S0053: 1.
HNHBM66	860119	4805	24 - 374	14557	Thr-42 to His-47, Leu-55 to Trp-60, Thr-75 to His-83, Pro-85 to Glu-96.	S0053: 2

HNHBO20	793416	4806	460 - 666	14558	Tyr-8 to Ser-16.	S0052: 1, S0428: 1 and S0053: 1.
HNHBO71	868059	4807	2 - 151	14559		S0053: 2
HNHBO83	526746	4808	109 - 237	14560	Glu-22 to Val-33.	S0053: 2
HNHBO95	574090	4809	14 - 175	14561		S0053: 2
HNHBS07	953850	4810	57 - 173	14562		S0053: 2
HNHBS23	574048	4811	92 - 328	14563	Thr-1 to Lys-6, Gly-44 to Gly-51.	S0053: 2
HNHBS38	925693	4812	493 - 963	14564	Val-23 to Asn-43, Ser-91 to Glu-107.	H0650: 1, S0428: 1 and S0053: 1.
HNHBU20	669866	4813	129 - 257	14565	Lys-21 to Phe-27.	S0053: 2
HNHBU21	574030	4814	138 - 332	14566	Thr-14 to Met-26.	S0053: 3
	723352	9590	246 - 401	19342	Leu-12 to Ser-18.	
HNHBU37	574139	4815	3 - 338	14567	Thr-1 to Leu-8, Thr-50 to Lys-57.	S0053: 2
HNHBU79	597123	4816	268 - 89	14568		S0053: 2
HNHBU82	577193	4817	185 - 394	14569	Lys-8 to Arg-13, Ile-24 to Tyr-29, Arg-49 to Arg-60.	S0053: 2
					Thr-1 to Leu-6.	
HNHBU91	765815	4818	62 - 232	14570		S0053: 2
HNHBU92	753550	4819	12 - 254	14571	Glu-8 to Leu-16.	S0053: 3
HNHBU93	757745	4820	71 - 229	14572		S0053: 2
HNHBU55	574026	4821	85 - 219	14573	Leu-1 to Lys-8, Arg-19 to Cys-29.	S0053: 2
HNHBY06	936012	4822	28 - 210	14574		S0053: 1 and S0216: 1.
HNHBY45	774280	4823	213 - 389	14575		S0053: 1 and S0216: 1.
HNHBY60	964712	4824	2 - 187	14576	Pro-7 to Ala-12.	S0053: 3
HNHBY83	694401	4825	94 - 492	14577	His-21 to Asp-38, Glu-41 to Ile-53.	S0053: 2
HNHBY203	924873	4826	152 - 349	14578		S0053: 2
HNHCC42	577343	4827	143 - 274	14579	Gly-15 to His-20.	S0053: 2
HNHCD63	574309	4828	102 - 359	14580		S0053: 2
HNHCE68	574028	4829	100 - 387	14581	Ser-4 to Gly-12.	S0053: 2
HNHCCJ25	679154	4830	3 - 311	14582	Arg-1 to Asn-13, Pro-35 to Ala-41.	S0053: 2

HNHC135	860112	4831	3 - 182	14583			S0053: 2	
HNHC139	574084	4832	1 - 129	14584		Lys-14 to Ala-19, Ser-27 to Ser-34.	S0053: 2 and L0789: 1.	
HNHC168	753558	4833	65 - 250	14585		Lys-1 to Ala-11, Pro-19 to Lys-28, Ser-36 to Trp-41.	S0053: 2	
HNHC171	760565	4834	79 - 198	14586		Ser-13 to Cys-23.	S0053: 1 and S0216: 1.	
HNHC180	786033	4835	305 - 427	14587		Lys-12 to Arg-20.	S0053: 1 and H0436: 1.	
HNHC120	780527	4836	3 - 257	14588		Leu-52 to Ser-60, Gln-63 to Leu-68.	AR050: 182, AR054: 144, AR051: 129 H0060: 1, S0428: 1 and S0053: 1.	
HNHC138	574082	4837	1 - 225	14589		Gly-1 to Leu-11.	S0053: 2	
HNHC147	719476	4838	50 - 277	14590		Ala-1 to Gln-9, Ser-14 to Leu-19, Gly-25 to Leu-41.	S0053: 2	
HNHC180	573010	4839	9 - 293	14591			S0052: 1 and S0053: 1.	
HNHC170	577186	4840	62 - 193	14592			S0053: 2	
HNHC027	574337	4841	64 - 198	14593		Val-5 to Gln-14.	S0053: 2	
HNHC048	860641	4842	26 - 361	14594		Ser-11 to Ala-24, Gln-30 to Lys-37, Cys-45 to Gly-54, Thr-101 to Ser-112.	S0052: 2 and S0053: 1.	
HNHC064	574147	4843	61 - 246	14595			S0053: 2	
HNHC118	666844	4844	2 - 172	14596		Pro-1 to Lys-6.	S0053: 2	
HNHC122	934307	4845	284 - 586	14597		Phe-46 to Pro-54, Cys-69 to Gln-74.	S0428: 1 and S0053: 1.	
HNHC137	866950	4846	197 - 373	14598			S0114: 1 and S0053: 1.	
HNHC178	506696	4847	3 - 194	14599		Leu-3 to Arg-9.	S0053: 2	
HNHC188	574341	4848	1 - 240	14600			S0053: 2	
HNHC170	757410	4849	3 - 263	14601			S0428: 1, S0053: 1, L0748: 1 and L0754: 1.	
HNHC118	574394	4850	32 - 130	14602			S0053: 2	
HNHC142	850918	4851	307 - 666	14603		Met-34 to Gly-43, Val-56 to Arg-62, Gln-85 to Gly-90.	H0457: 3, H0305: 1, H0589: 1 and S0053: 1.	

HNHCU157	735005	4852	3 - 239	14604	Gln-58 to Gly-65.	S0053: 2	
HNHCV72	766213	4853	221 - 343	14605		S0053: 1, S0216: 1 and L0439: 1.	
HNHCZ07	953881	4854	18 - 176	14606	Ala-33 to Trp-39.	H0650: 1 and S0053: 1.	
HNHCZ23	574325	4855	204 - 332	14607		S0053: 2	
HNHDA07	855988	4856	149 - 394	14608	Ser-1 to Ala-10, Leu-12 to Met-19, Ser-37 to Ser-46, Cys-52 to Leu-58, Pro-74 to Tyr-80.	S0053: 1, S0216: 1 and H0444: 1.	
HNHDA79	574350	4857	3 - 152	14609	Gln-15 to Gly-20.	S0053: 2	
HNHDA88	574150	4858	1 - 90	14610		S0053: 2	
HNHDB11	574323	4859	260 - 442	14611	Trp-7 to Gly-15, Thr-17 to Gln-31, Ser-40 to Ser-45.	S0053: 2	
HNHDB23	676290	4860	76 - 303	14612		S0053: 2	
HNHDB46	574329	4861	146 - 379	14613		S0053: 2	
HNHDB93	800661	4862	1 - 72	14614		S0053: 1 and S0216: 1.	
HNHDC26	574304	4863	145 - 300	14615		S0053: 2	
HNHDC47	708705	4864	22 - 189	14616		S0053: 2	
HNHDC83	577339	4865	192 - 434	14617	Ser-1 to Asn-13.	S0053: 2	
HNHDC95	734794	4866	13 - 105	14618		S0053: 2	
HNHDE38	709277	4867	132 - 260	14619	Ser-26 to Cys-31.	S0053: 1 and H0521: 1.	
HNHDF31	968249	4868	8 - 130	14620	Leu-13 to Ser-20, Glu-28 to Ser-33.	S0053: 2	
HNHDF48	574385	4869	61 - 174	14621		S0053: 2	
HNHDP06	936046	4870	2 - 226	14622	Arg-18 to Arg-23.	S0053: 2	
HNHDP60	860101	4871	49 - 210	14623		S0053: 2	
HNHDL62	577701	4872	29 - 193	14624	Gly-48 to Arg-54.	S0053: 2	
HNHDL90	789082	4873	116 - 397	14625	Arg-1 to Glu-6, Gln-25 to Gly-30, Pro-44 to Gly-56, Gly-60 to Trp-65.	S0053: 1 and S0216: 1.	
HNHDL94	773592	4874	201 - 326	14626	Gly-7 to Tyr-13.	S0053: 2	
HNHDM03	924713	4875	1 - 285	14627		S0053: 1 and S0216: 1.	

HNHDM40	711352	4876	93 - 254	14628	His-27 to Lys-38.	S0053: 2
HNHDM50	724550	4877	33 - 281	14629	Cys-8 to Trp-19.	S0053: 2
HNHDM74	506621	4878	263 - 436	14630	Asn-29 to Ser-35.	S0053: 2
HNHDM27	573388	4879	2 - 187	14631		S0053: 2
HNHDM79	735007	4880	178 - 273	14632		S0052: 1 and S0053: 1.
HNHDP04	839988	4881	241 - 750	14633	Gly-17 to Gly-23.	S0053: 4
HNHDP29	746093	4882	172 - 354	14634		S0053: 1 and S0216: 1.
HNHDP11	967334	4883	332 - 496	14635	Arg-8 to Gln-14.	H0486: 1 and S0053: 1.
HNHDP17	573328	4884	132 - 293	14636	Lys-19 to Trp-38.	
HNHDP35	707334	4885	1 - 126	14637	His-1 to Val-10.	S0053: 3
HNHDP39	704560	4886	2 - 151	14638	Lys-18 to Cys-28.	H0264: 1 and S0053: 1.
HNHDP56	577256	4887	322 - 507	14639	Gln-1 to Trp-9.	S0053: 2
HNHDP65	573357	4888	148 - 258	14640	Leu-24 to Arg-29.	S0053: 3
HNHDP71	496246	4889	143 - 400	14641		S0053: 2
HNHDP93	923817	4890	37 - 231	14642		S0053: 1 and H0445: 1.
HNHDP10	968082	4891	1 - 189	14643	Asp-7 to Pro-14.	S0053: 2
HNHDP28	685580	4892	25 - 240	14644	Arg-19 to Met-27.	
HNHDP71	575480	4893	51 - 230	14645	Gln-16 to Arg-34.	S0053: 2
HNHDS27	683585	4894	70 - 213	14646	Arg-6 to Tyr-11.	S0053: 2
HNHDS83	573347	4895	1 - 189	14647	Asp-19 to Arg-26.	S0053: 3
HNHDS88	573349	4896	184 - 348	14648	Tyr-39 to Asn-48.	S0053: 2
HNHDT01	917004	4897	159 - 335	14649		S0053: 2
HNHDT28	887158	4898	2 - 397	14650		H0271: 1 and S0053: 1.
HNHDT42	574455	4899	91 - 258	14651		AR054: 9, AR051: 4,
HNHDT54	728871	4900	75 - 407	14652	Gln-1 to Phe-16.	AR050: 2
HNHDT83	717796	4901	5 - 442	14653	Pro-64 to Trp-76.	S0053: 4
					Ser-1 to Asp-8.	S0052: 1 and S0053: 1.
					Pro-46 to Asp-51.	H0580: 1 and S0053: 1.
					Gly-84 to Pro-92.	S0053: 2
HNHDPV50	506622	4902	3 - 209	14654	His-1 to Asn-7.	S0053: 2

HNHDY84	750262	4903	3 - 242	14655	Ser-21 to Gln-35.	S0053: 2	
HNHDW78	723189	4904	1 - 285	14656	Leu-13 to Trp-25.	S0053: 2, S0052: 1 and S0428: 1.	
HNHDX80	779334	4905	98 - 298	14657	His-7 to Ser-12.	S0053: 1 and S0216: 1.	
HNHDX84	615272	4906	3 - 119	14658	His-1 to Ser-6.	S0053: 2	
HNHDY18	573329	4907	120 - 242	14659	Gly-11 to Met-16.	S0053: 2	
HNHDY37	582473	4908	19 - 123	14660	Asn-1 to Leu-20.	H0305: 1, L0761: 1, L0791: 1 and S0053: 1.	
HNHDY45	576776	4909	142 - 282	14661	Glu-1 to Gly-6.	S0052: 2 and S0053: 1.	
					Val-40 to Phe-47.		
HNHDY50	924211	4910	2 - 175	14662		S0053: 2	
HNHDY54	945708	4911	1 - 546	14663	Ser-25 to Gly-33.	AR061: 8, AR089: 2	
					Ser-43 to Trp-52.	S0053: 2	
HNHDY83	795954	4912	1 - 255	14664	Gly-1 to Asn-6.	S0053: 2	
HNHDZ14	506738	4913	3 - 200	14665	Pro-19 to Leu-28.		
					His-1 to Pro-7.	S0053: 2	
					Ser-44 to Thr-50.		
HNHDZ26	419716	4914	96 - 431	14666	Trp-1 to His-6.	S0053: 2 and L0774: 1.	
					Leu-25 to Trp-37.		
HNHDZ69	573346	4915	72 - 182	14667		S0053: 2	
HNHEA06	835893	4916	110 - 331	14668	Leu-1 to Thr-14.	H0581: 1 and S0053: 1.	
					Phe-30 to Phe-40.		
HNHEA21	574868	4917	1 - 243	14669		S0052: 1 and S0053: 1.	
HNHEA40	573327	4918	3 - 179	14670		S0053: 2	
HNHEA96	796491	4919	1 - 237	14671		S0053: 1 and S0216: 1.	
HNHEB47	573339	4920	3 - 182	14672	Tyr-34 to Ser-40.	S0053: 2	
					Arg-46 to Arg-56.		
HNHEB88	412655	4921	51 - 140	14673		S0053: 2	
HNHEC40	576507	4922	112 - 267	14674	Glu-24 to Gly-30.	S0053: 2	
					Ser-38 to Gly-47.		
HNHEC51	577306	4923	68 - 418	14675	Ala-3 to Ser-8.	S0053: 2 and H0271: 1.	
					Pro-24 to Gly-35.		
					Gly-51 to Thr-60.		
HNHEC96	796463	4924	1 - 291	14676	Pro-7 to Met-12.	S0053: 1 and S0216: 1.	
					Gln-22 to Ser-28.		
HNHED02	920414	4925	188 - 340	14677	Cys-2 to Asn-8.	S0053: 2	

HNHED51	682992	4926	339 - 686	14678	Thr-5 to Gly-13.	S0053: 1 and H0436: 1.
HNHED82	576541	4927	289 - 53	14679	Pro-17 to Leu-25, Gln-33 to Ser-41, Ala-62 to Ser-71, Ser-74 to Lys-79.	S0053: 2
HNHED83	576540	4928	124 - 330	14680	Pro-9 to His-15, Lys-27 to Lys-34, Lys-40 to Ile-55.	S0053: 2
HNHEE25	576512	4929	183 - 383	14681		S0053: 2
HNHEE30	576440	4930	267 - 410	14682	His-8 to Cys-40.	S0053: 2
HNHEE38	860073	4931	2 - 241	14683		S0053: 2
HNHEE40	576442	4932	289 - 426	14684	Asp-13 to Ala-19, Thr-40 to Gly-46.	S0053: 2
HNHEE49	576820	4933	74 - 313	14685		S0053: 2
HNHEF01	916792	4934	53 - 337	14686	Pro-1 to Pro-6, Gly-58 to Glu-63, Gln-68 to Lys-77.	S0053: 2
HNHEF73	576419	4935	3 - 206	14687	Lys-30 to Met-35.	S0053: 2
HNHEG28	586443	4936	28 - 336	14688	Thr-1 to Thr-11, Val-15 to Lys-26, Lys-80 to Gly-87.	AR050: 77, AR051: 70, AR054: 67 S0053: 2
HNHEG32	576426	4937	159 - 404	14689	Glu-1 to Leu-7, Ser-27 to Lys-32, Glu-36 to Glu-42, Ala-44 to Arg-53.	S0053: 2
HNHEG49	576415	4938	270 - 383	14690		S0053: 2
HNHEG68	861181	4939	192 - 299	14691	Ile-24 to Val-29.	S0212: 1 and S0053: 1.
HNHEG91	506278	4940	158 - 289	14692		S0053: 2
HNHEH04	582732	4941	64 - 171	14693	Glu-27 to Gly-36.	S0053: 2
HNHEH37	490514	4942	509 - 204	14694	Ile-29 to Ser-42, Glu-66 to Ala-92.	S0053: 2
	860064	9591	122 - 331	19343	Ala-12 to Cys-17, Glu-20 to Leu-30.	
HNHEH41	578589	4943	1 - 228	14695	Gln-1 to Arg-15.	H0073: 1 and S0053: 1.
HNHEH51	678114	4944	234 - 389	14696		S0053: 2
HNHEH52	860021	4945	67 - 372	14697	Thr-11 to Thr-18,	S0053: 2

HNHEH60	576517	4946	27 - 170	14698	Thr-31 to Glu-40, Arg-1 to Arg-6, His-24 to Glu-32.	S0053: 2	
HNHEH06	923080	4947	220 - 375	14699		S0053: 1 and S0216: 1.	
HNHEH64	576549	4948	191 - 313	14700		S0053: 2	
HNHEH07	953386	4949	59 - 325	14701		S0053: 1, S0216: 1 and L0594: 1.	
HNHEH11	967265	4950	1 - 237	14702	Glu-1 to Asp-13.	S0053: 1 and S0216: 1.	
HNHEH23	576533	4951	19 - 288	14703	Tyr-1 to Phe-8, Gly-21 to His-34, Gly-42 to Gly-52, Gly-57 to Asn-64, Leu-81 to Pro-86.	S0053: 3	
HNHEH24	916556	4952	78 - 230	14704		S0053: 2	
HNHEH44	716723	4953	106 - 207	14705	Ser-1 to Cys-6.	S0053: 2	
HNHEH57	576535	4954	148 - 246	14706		S0053: 2	
HNHEH85	964882	4955	1 - 162	14707	Ala-24 to Glu-31, Asn-39 to Gly-46.	H0063: 1 and S0053: 1.	
HNHEK01	916790	4956	223 - 465	14708	Cys-17 to Ser-25.	H0589: 1 and S0053: 1.	
HNHEK63	576819	4957	1 - 465	14709	Gly-1 to Leu-6, Gly-40 to Arg-46, Cys-73 to Ser-80.	S0053: 2	
HNHEK79	954548	4958	43 - 165	14710		S0114: 1 and S0053: 1.	
HNHEK83	576420	4959	3 - 212	14711	Glu-4 to Thr-11, Ile-35 to Asn-46.	S0053: 2	
HNHEL09	576418	4960	3 - 116	14712	Lys-26 to Asn-34.	S0053: 2	
HNHEL37	713723	4961	345 - 223	14713		S0053: 1 and H0521: 1.	
HNHEL42	859830	4962	209 - 412	14714		S0053: 1 and S0216: 1.	
HNHEL44	576423	4963	3 - 212	14715		S0053: 2	
HNHEL53	506281	4964	124 - 273	14716		S0053: 2	
HNHEL82	576430	4965	246 - 386	14717		S0053: 2 and H0589: 1.	
HNHEL94	786930	4966	1 - 249	14718	Lys-17 to Glu-22.	H0421: 2 and S0053: 1.	
HNHEM04	950725	4967	2 - 154	14719		S0053: 2	
HNHEM34	860047	4968	3 - 170	14720	Arg-38 to Lys-43.	S0428: 1 and S0053: 1.	
HNHEM35	576424	4969	156 - 341	14721		S0053: 2	



HNHEM83	825354	4970	30 - 425	14722			S0052: 2, S0216: 2 and S0053: 1.	
HNHEM85	783480	4971	178 - 345	14723	Leu-2 to Ser-20, Lys-50 to Phe-56.		H0264: 1 and S0053: 1.	
HNHEN02	920420	4972	210 - 311	14724			S0053: 2	
HNHEN16	615402	4973	2 - 292	14725			S0053: 2	
HNHEN56	733521	4974	182 - 346	14726			H0264: 1, S0053: 1 and J0600: 1.	
HNHEN66	576544	4975	40 - 255	14727	Pro-25 to Pro-32.		S0053: 2	
HNHEN76	576542	4976	1 - 237	14728	Ala-28 to Gln-44.		S0053: 2 and S0428: 1.	
HNHEO29	576548	4977	120 - 440	14729	His-10 to Thr-16.		S0053: 2	
HNHEO43	860046	4978	175 - 348	14730			H0556: 1 and S0053: 1.	
HNHEO83	706683	4979	17 - 172	14731	His-15 to Gly-20, Ser-36 to Gln-47.		S0053: 2	
HNHEO84	859992	4980	102 - 272	14732	Thr-3 to Lys-9, Cys-50 to Arg-56.		S0053: 2	
HNHEP49	576453	4981	3 - 281	14733	Pro-1 to Cys-14, Glu-40 to Ser-48.		S0053: 2	
HNHEQ07	953577	4982	141 - 314	14734	Thr-8 to Asp-19.		S0053: 2 and S0428: 1.	
HNHEQ46	576437	4983	168 - 311	14735			S0053: 2	
HNHEQ60	576455	4984	2 - 133	14736	Ala-1 to Arg-6.		S0053: 2	
HNHEQ70	577188	4985	73 - 426	14737	Arg-1 to Cys-9, Leu-64 to Gly-15.		S0053: 2	
HNHEQ92	576456	4986	56 - 226	14738	His-24 to Ile-29, Tyr-31 to Asn-41.		S0053: 2	
HNHEQ94	577303	4987	121 - 249	14739	Glu-26 to Gln-37.		S0053: 2	
HNHER06	918651	4988	1 - 285	14740	Gln-11 to His-19, Ala-25 to Glu-38.		S0053: 1 and S0216: 1.	
HNHER21	496484	4989	92 - 529	14741	Pro-8 to Arg-13, Ser-33 to Val-38, Ile-50 to Ala-57.		S0053: 2	
HNHES05	932092	4990	1 - 123	14742			S0053: 2	
HNHES06	859833	4991	2 - 292	14743			S0053: 1 and S0216: 1.	
HNHES07	953443	4992	55 - 183	14744	Asn-3 to Gln-9.		S0053: 2	
HNHES11	967128	4993	92 - 268	14745	Glu-1 to Pro-12.		S0053: 2	

HNHES23	675946	4994	258 - 46	14746	Pro-28 to Gly-37, Lys-53 to Asn-64.	L0766: 4, L0789: 1, S0052: 1 and S0053: 1.
HNHES33	576497	4995	80 - 325	14747	Pro-1 to Ala-7.	S0053: 2
HNHES56	881504	4996	91 - 393	14748	Ile-86 to Ser-93.	H0305: 1 and S0053: 1.
HNHES61	973297	4997	186 - 407	14749	Asp-14 to Gln-23, Arg-31 to Gln-38, Ile-42 to Gln-47.	S0053: 2
HNHES81	777979	4998	157 - 384	14750	Leu-15 to Gly-28, Val-44 to Cys-50.	S0053: 2
HNHET11	967127	4999	216 - 371	14751	Asp-14 to Phe-19, Glu-34 to Asn-43.	S0053: 2
HNHET17	576746	5000	110 - 322	14752	Gly-31 to Gly-37, Pro-39 to Ala-46, Cys-50 to Gln-60.	S0052: 1 and S0053: 1.
HNHET24	860006	5001	90 - 338	14753	Pro-49 to Asp-54, Ser-65 to Trp-73.	S0053: 2
HNHET25	953410	5002	63 - 362	14754	Ser-29 to Tyr-40, Ala-62 to Ala-85.	S0053: 2
HNHET57	577360	5003	240 - 458	14755		S0052: 1 and S0053: 1.
HNHEU50	724449	5004	78 - 254	14756	Arg-25 to Asn-36.	S0053: 2
HNHEU60	576387	5005	2 - 253	14757	Gln-19 to Gly-26.	S0053: 2
HNHEU71	574396	5006	111 - 290	14758		S0053: 2
HNHEV25	577111	5007	3 - 131	14759	Cys-26 to Gln-35.	S0053: 2
HNHEV44	716661	5008	3 - 206	14760		L0748: 2, H0402: 1, L0664: 1 and S0053: 1.
HNHEV46	577337	5009	3 - 182	14761	Glu-22 to Gly-31.	S0053: 2
HNHEV49	575777	5010	108 - 308	14762	Glu-30 to His-35.	S0053: 2
HNHEW03	924475	5011	116 - 298	14763	Asp-1 to Ser-16, Trp-43 to Ile-51.	S0052: 1, S0053: 1 and H0444: 1.
HNHEW14	658506	5012	31 - 336	14764	Gln-13 to Gly-26.	L0361: 2, S0428: 1 and S0053: 1.
HNHEW19	953446	5013	170 - 3	14765		S0053: 2
HNHEW21	670987	5014	69 - 197	14766		S0053: 3
HNHEW75	576361	5015	146 - 244	14767		S0053: 2

HNHEW76	770081	5016	56 - 196	14768				S0053: 2
HNHEW95	953566	5017	3 - 257	14769	His-1 to Arg-9, Arg-47 to Cys-62.			S0053: 2
HNHEX12	970764	5018	168 - 374	14770				S0053: 2
HNHEX40	711225	5019	289 - 426	14771	Cys-3 to Cys-12, Gly-16 to Gln-26, Leu-30 to Ile-36.			H0271: 1 and S0053: 1.
HNHEX54	575783	5020	1 - 267	14772	Gly-1 to Gly-6, Ala-15 to Gly-20, Pro-31 to Arg-52, Leu-79 to Gly-88.			S0053: 2
HNHEX66	860036	5021	101 - 424	14773				S0053: 4
HNHEX77	860037	5022	205 - 432	14774	Pro-8 to Val-15, Thr-19 to Cys-32.			S0053: 3
HNHEY59	959668	5023	3 - 191	14775	Pro-53 to Gln-58.			S0053: 2
HNHEY63	575741	5024	263 - 397	14776				S0053: 2
HNHEY93	575745	5025	1 - 99	14777				S0053: 2
HNHEZ07	953438	5026	49 - 153	14778	Leu-24 to Cys-29.			H0318: 1 and S0053: 1.
HNHEZ18	575788	5027	3 - 104	14779	Gln-3 to Lys-10, Asp-18 to Leu-24.			S0053: 2
HNHEZ19	887442	5028	3 - 266	14780	Pro-16 to Gln-21.			AR054: 7, AR051: 1, AR050: 0
HNHFA05	860033	5029	1 - 267	14781	Ser-7 to Gly-22, Trp-41 to Thr-48, Pro-56 to Ser-65, Gln-73 to Leu-82.			S0053: 2 S0053: 1 and S0216: 1.
HNHFA11	967126	5030	179 - 361	14782				H0305: 1 and S0053: 1.
HNHFA35	577302	5031	19 - 219	14783	Thr-1 to Ala-12.			S0053: 3
HNHFA59	576594	5032	258 - 413	14784				S0053: 2
HNHFB09	575786	5033	200 - 430	14785				S0053: 2
HNHFB19	668713	5034	118 - 270	14786				S0053: 1 and H0444: 1.
HNHFB27	576865	5035	86 - 427	14787	Leu-5 to Pro-11.			H0341: 1 and S0053: 1.
HNHFB32	836006	5036	274 - 444	14788				S0053: 2
HNHFB39	575740	5037	178 - 348	14789	Pro-3 to Cys-26.			S0053: 2
hnhfb53	728265	5038	233 - 406	14790				S0053: 2

HNHFC34	860027	5039	3 - 182	14791	His-1 to Arg-10, Asn-20 to Trp-37, Arg-39 to Pro-47, Glu-53 to Asn-60.	S0053: 2	
HNHFC43	583660	5040	277 - 104	14792	Ile-3 to Val-11, Pro-39 to Lys-45.	S0052: 1 and S0053: 1.	
	590226	9592	349 - 215	19344			
	973274	9593	484 - 771	19345			
HNHFC60	576438	5041	95 - 343	14793		S0053: 2	
HNHFC61	571185	5042	72 - 242	14794	Glu-10 to Val-32.	S0053: 2	
HNHFC67	576385	5043	46 - 312	14795	Lys-3 to Pro-9.	S0053: 2	
HNHFC78	576435	5044	97 - 303	14796	Ala-30 to Gly-43, Ser-53 to Ala-66.	S0053: 2	
HNHFC92	577240	5045	33 - 236	14797		S0053: 2	
HNHFD46	576796	5046	122 - 382	14798	Phe-4 to Gly-9, Thr-29 to Glu-52.	S0053: 2	
HNHFD88	506354	5047	2 - 358	14799		S0052: 1 and S0053: 1.	
HNHFE07	953585	5048	65 - 3	14800		S0053: 2	
HNHFE40	576431	5049	148 - 336	14801		S0053: 2	
HNHFE69	577244	5050	1 - 225	14802		S0053: 2	
HNHFF08	860229	5051	434 - 607	14803	Lys-24 to Lys-31.	S0428: 4, S0116: 1, H0179: 1 and S0053: 1.	
HNHFF21	625613	5052	239 - 340	14804		S0053: 2	
HNHFF29	576412	5053	50 - 280	14805	Arg-11 to Gly-19.	S0053: 2	
HNHFF56	576432	5054	157 - 390	14806	Pro-27 to Pro-32.	S0053: 2	
HNHFG07	953669	5055	265 - 399	14807	Leu-1 to Tyr-11.	S0053: 2	
HNHFG11	967255	5056	59 - 283	14808		S0053: 1 and H0444: 1.	
HNHFG37	658459	5057	1 - 405	14809	Lys-22 to Gly-37, Thr-46 to Asp-51, Arg-72 to Asp-77.	S0053: 2	
HNHFG94	720292	5058	129 - 341	14810	Gly-1 to Trp-10, Pro-13 to Pro-25.	S0053: 1 and H0521: 1.	
HNHGH21	575785	5059	252 - 590	14811	Ala-26 to Phe-31, Ala-35 to Gly-42.	S0053: 2 and L0740: 1.	
HNHGH56	575784	5060	1 - 177	14812		S0053: 2	

HNHFH78	773610	5061	142 - 399	14813	Gly-8 to Trp-14.	S0053: 2
HNHFH69	575747	5062	3 - 89	14814	Lys-22 to Glu-29.	S0053: 2
HNHFH88	575751	5063	3 - 182	14815	Ala-40 to Ser-47.	S0053: 2
HNHFH95	577328	5064	260 - 406	14816		S0053: 2
HNHFH45	720757	5065	172 - 435	14817	Glu-23 to Arg-31, Arg-35 to Gly-41, Asn-56 to Leu-61.	S0053: 2 and S0216: 1.
HNHFH67	699523	5066	265 - 143	14818	Asp-1 to Arg-10, Asp-13 to Met-20.	S0053: 2, L0748: 1 and L0758: 1.
HNHFH37	576386	5067	34 - 336	14819	Asn-31 to Ser-37, Ser-78 to Gly-97.	S0053: 3
HNHFH77	970770	5068	43 - 453	14820	Glu-1 to Gly-9, Val-14 to Gly-19, Lys-25 to Thr-32.	S0053: 3
HNHFH48	664588	5069	3 - 122	14821	Val-6 to Ala-15.	S0053: 2
HNHFH82	576428	5070	45 - 398	14822	Leu-1 to Ser-9.	S0053: 2
HNHFH01	916787	5071	178 - 303	14823		S0053: 2
HNHFH32	577331	5072	14 - 358	14824		S0053: 2
HNHFH30	691083	5073	80 - 220	14825		S0053: 2
HNHFH52	727258	5074	1 - 165	14826	Gly-1 to Glu-12.	S0053: 2
HNHFH95	761672	5075	46 - 180	14827		S0053: 2
HNHFH045	576408	5076	180 - 338	14828	Val-1 to Glu-6.	S0053: 2
HNHFH048	707311	5077	17 - 292	14829	Gln-23 to His-32, Pro-48 to Leu-55.	H0416: 1, S0053: 1 and L0439: 1.
HNHFH09	860013	5078	85 - 279	14830		S0053: 1 and S0216: 1.
HNHFH10	964849	5079	284 - 430	14831	Leu-20 to Gly-27.	S0053: 2
HNHFH01	916773	5080	2 - 301	14832	Ala-1 to Ala-6, Ala-29 to Leu-40, Ser-65 to Tyr-77.	H0179: 1 and S0053: 1.
HNHFH019	418108	5081	1 - 162	14833	Trp-1 to Trp-6.	S0053: 2
HNHFH030	692807	5082	1 - 285	14834	Thr-7 to Cys-13.	S0053: 2
HNHFH075	766595	5083	27 - 356	14835		S0053: 2
HNHFH088	576398	5084	1 - 204	14836	Thr-17 to Gly-25.	S0053: 2
HNHFH092	576400	5085	111 - 1	14837		S0053: 2
HNHFH12	860003	5086	127 - 315	14838	Arg-1 to Glu-14.	S0053: 2

HNHFQ22	964716	5087	19 - 444	14839	Gly-23 to Met-29, Arg-92 to Gly-98.	S0052: 1 and S0053: 1.
HNHFQ24	577330	5088	136 - 336	14840	Lys-7 to Thr-13.	S0053: 2
HNHFQ67	751787	5089	1 - 228	14841	Thr-1 to Lys-11.	S0053: 2
HNHFS03	924610	5090	108 - 473	14842	Thr-1 to Asp-10, Arg-49 to Gln-55.	H0271: 1 and S0053: 1.
HNHFS79	734798	5091	2 - 151	14843		S0053: 2
HNHFU09	625726	5092	191 - 406	14844	Glu-4 to Glu-9, Glu-11 to Ser-19, Pro-24 to Cys-33.	S0053: 2
HNHFU35	707335	5093	184 - 312	14845		S0053: 2
HNHFU45	920844	5094	91 - 444	14846		H0073: 1 and S0053: 1.
HNHFU57	860002	5095	1 - 171	14847	Lys-9 to Gly-16.	S0053: 2
HNHFV16	952376	5096	77 - 373	14848	Leu-14 to Asn-29, Pro-45 to Arg-52, Ala-58 to Gly-65.	S0053: 1 and S0216: 1.
HNHFV52	576390	5097	34 - 399	14849		S0053: 2
HNHFV56	724417	5098	281 - 475	14850		S0052: 1 and S0053: 1.
HNHFV66	860000	5099	3 - 173	14851	Asn-1 to Glu-24.	S0053: 2
HNHFV68	925820	5100	86 - 346	14852		H0255: 2 and S0053: 1.
HNHFV70	757281	5101	150 - 329	14853		S0053: 1 and S0216: 1.
HNHFV08	959476	5102	1 - 297	14854	Glu-30 to Pro-50.	S0053: 2
HNHFV29	663912	5103	3 - 338	14855	Pro-11 to Ala-16, Ser-24 to Thr-34.	S0053: 2
HNHFX22	674638	5104	3 - 131	14856	Arg-17 to Val-26, Asn-28 to Gly-35, Arg-37 to Leu-42.	S0053: 2 and H0436: 2.
HNHFX35	668656	5105	3 - 356	14857	His-1 to Gly-9, Pro-23 to Gly-28, Gln-66 to His-75.	S0053: 2
HNHFX56	716628	5106	1 - 237	14858		S0053: 2
HNHFX68	753045	5107	109 - 38	14859		S0053: 2
HNHFX70	756459	5108	62 - 370	14860	Ser-53 to Asn-77.	S0052: 1 and S0053: 1.
HNHFX89	712347	5109	258 - 425	14861	Gln-8 to Ser-16.	S0053: 2
HNHFX21	670946	5110	2 - 169	14862	Lys-18 to Tyr-35.	S0053: 2

HNHFY95	734764	5111	24 - 164	14863				S0053: 2
HNHGA24	967093	5112	200 - 373	14864			Pro-4 to Lys-19,	
HNHGA33	702461	5113	50 - 166	14865			Lys-1 to Ile-6,	
HNHGA46	719073	5114	1 - 156	14866			Thr-45 to Lys-52,	
HNHGB83	781205	5115	37 - 174	14867				
HNHGB96	784362	5116	123 - 233	14868				
HNHGC13	927065	5117	121 - 222	14869				
HNHGC35	707337	5118	58 - 267	14870				
HNHGC41	711654	5119	3 - 224	14871				
HNHGC62	733745	5120	478 - 654	14872				
HNHGD07	953416	5121	1 - 420	14873				
HNHGD14	920149	5122	177 - 323	14874				
HNHGD50	667930	5123	2 - 172	14875				
HNHGD51	934632	5124	105 - 281	14876				
HNHGD68	753053	5125	74 - 307	14877				
HNHGD84	671077	5126	165 - 332	14878				
HNHGE09	939727	5127	22 - 645	14879				
HNHGE27	683432	5128	322 - 197	14880				
HNHGE43	715304	5129	65 - 325	14881				
HNHGE64	746605	5130	3 - 104	14882				
HNHGF14	835984	5131	13 - 387	14883				
HNHGF21	670956	5132	54 - 251	14884				

HNHGF37	708708	5133	164 - 331	14885	Leu-58 to Leu-63.	S0053: 2
HNHGF45	859552	5134	70 - 384	14886	Ala-23 to Gly-28.	S0053: 1 and S0216: 1.
HNHGF46	705128	5135	21 - 425	14887	Ser-28 to Gly-33.	S0052: 1 and S0053: 1.
					Leu-12 to Ser-33.	
					Ala-42 to Leu-48.	
					Ser-57 to Pro-65.	
HNHGF85	761811	5136	2 - 208	14888	Ala-7 to Ala-17.	S0053: 1 and S0216: 1.
					Ser-32 to Gly-42.	
					Glu-61 to Lys-69.	
HNHGF90	730957	5137	2 - 280	14889	Leu-62 to Pro-69.	S0053: 2
HNHGF91	750389	5138	276 - 431	14890	Ala-40 to Thr-46.	S0052: 1 and S0053: 1.
HNHGG06	935530	5139	146 - 310	14891		S0053: 2 and L0748: 2.
HNHGG73	764446	5140	76 - 231	14892		S0053: 2
HNHGG76	746607	5141	1 - 198	14893	Asp-53 to Trp-63.	S0053: 3
HNHGG89	772213	5142	73 - 303	14894	Lys-12 to Arg-23.	S0053: 2
HNHGG93	792335	5143	22 - 195	14895	Gly-30 to Phe-38.	S0053: 1 and S0216: 1.
HNHGG95	760386	5144	1 - 411	14896	Arg-53 to Gln-62.	S0053: 2
					Pro-79 to Ser-84.	
HNHGH02	920147	5145	3 - 257	14897	His-1 to Arg-9.	S0052: 1 and S0053: 1.
					Pro-44 to Gln-49.	
HNHGH20	959499	5146	2 - 241	14898	Val-22 to His-42.	S0053: 2
					Arg-57 to His-62.	
					His-75 to Arg-80.	
HNHGH42	713036	5147	2 - 175	14899	Gly-26 to Gly-37.	S0053: 3
HNHGH55	707336	5148	124 - 303	14900	Pro-18 to Arg-27.	S0053: 2
HNHGH79	775218	5149	3 - 143	14901	Asp-13 to Trp-23.	S0053: 2
HNHGH81	576279	5150	157 - 345	14902		S0052: 2 and S0053: 1.
HNHGH103	968076	5151	1 - 225	14903	Phe-69 to Ile-75.	S0053: 1 and S0216: 1.
HNHGH109	625624	5152	193 - 312	14904	Ser-1 to Trp-9.	S0053: 2
					Pro-15 to Glu-26.	
HNHGH20	668916	5153	173 - 397	14905	Cys-4 to Leu-10.	S0053: 2
					Pro-12 to Gly-21.	
					Ile-31 to Asn-38.	
HNHGH28	686733	5154	96 - 323	14906	Glu-34 to Thr-42.	S0053: 3
HNHGH39	850088	5155	3 - 167	14907	Ala-1 to Leu-8.	H0402: 1 and S0053: 1.



HNHG65	750269	5156	146 - 418	14908	Gly-26 to Ala-42, Thr-51 to Gly-58.	S0053: 2	
HNHG81	777958	5157	172 - 402	14909	Glu-12 to Ser-17.	S0053: 2	
HNHG05	935525	5158	111 - 260	14910		S0053: 2	
HNHGK24	783674	5159	117 - 335	14911	His-2 to Glu-8, Pro-67 to Ala-73.	S0053: 1 and S0216: 1.	
HNHGK70	728593	5160	2 - 421	14912		S0053: 2	113900, 126340, 126391, 130410, 134790, 138570, 160900, 173850, 191044, 258501, 600040, 600138, 602225, 602225
HNHGN17	663923	5161	139 - 273	14913		S0052: 1 and S0053: 1.	
HNHGO21	670955	5162	2 - 289	14914	Pro-45 to Glu-59, Gly-66 to Leu-73.	S0053: 2	
HNHGO65	750267	5163	3 - 92	14915	Arg-1 to Gly-9, Arg-17 to His-29, Met-40 to Arg-47, His-51 to Pro-61.	S0053: 2	
HNHGO68	732370	5164	106 - 324	14916		S0053: 2	
HNHGP08	859964	5165	2 - 97	14917	Arg-2 to Leu-11.	S0053: 2	
HNHGP31	698047	5166	3 - 284	14918	Ser-9 to Leu-15, His-57 to Cys-64, Glu-84 to Arg-94.	S0053: 2	
HNHGP32	699292	5167	161 - 268	14919	Gln-1 to Glu-6, Arg-20 to Met-25. Ile-17 to Pro-26.	S0053: 2	
HNHGP40	916551	5168	233 - 391	14920		S0053: 2	
HNHGP73	934446	5169	8 - 163	14921		S0053: 1 and S0216: 1.	
HNHGP83	780328	5170	65 - 346	14922	Pro-31 to Gly-43, Leu-48 to Asn-57, Lys-87 to Ser-94.	S0053: 1 and S0216: 1.	
HNHGO02	920146	5171	129 - 404	14923	Gln-35 to Gly-46, Ser-54 to Phe-59, Val-64 to Gly-74.	S0053: 3	
HNHGO25	678151	5172	250 - 447	14924		S0053: 2	

HNHGQ28	859965	5173	52 - 447	14925	Thr-58 to Cys-63, Ala-99 to Ser-104.	S0053: 2
HNHGQ49	573340	5174	280 - 471	14926	Met-37 to Gln-44.	S0053: 2
HNHGQ79	562748	5175	342 - 500	14927	Leu-22 to His-33, Ala-46 to Leu-53.	S0053: 2
	581933	9594	348 - 506	19346	Leu-22 to His-33, Ala-46 to Leu-53.	
HNHGR35	698501	5176	147 - 329	14928	Phe-4 to Ile-17.	S0053: 2
HNHGR43	918711	5177	108 - 314	14929		S0053: 1 and S0216: 1.
HNHGR34	706671	5178	97 - 435	14930	Gly-63 to Gln-69, Asp-84 to Ser-89, Val-103 to Asn-112.	S0053: 2
HNHGT37	708706	5179	3 - 275	14931		S0053: 2
HNHGT51	859962	5180	146 - 367	14932	Leu-6 to Gln-15.	S0053: 2
HNHGT64	725710	5181	122 - 328	14933	Asn-1 to Leu-6.	S0053: 2
HNHGT74	765602	5182	71 - 445	14934		S0053: 2
HNHGU19	668693	5183	179 - 421	14935		S0053: 2
HNHGU41	791822	5184	362 - 499	14936		S0053: 1 and S0216: 1.
HNHGU44	716634	5185	61 - 264	14937		S0053: 2
HNHGU84	783041	5186	18 - 56	14938		S0053: 2
HNHGU89	761837	5187	161 - 355	14939	Ser-4 to Pro-11.	S0053: 2 and S0216: 1.
HNHGV18	666473	5188	198 - 329	14940		S0053: 2
HNHGV22	674653	5189	1 - 195	14941	Gly-1 to His-36.	S0053: 2
HNHGV29	421819	5190	2 - 322	14942	Pro-35 to Leu-48.	S0053: 2
HNHGV45	754053	5191	3 - 287	14943	His-1 to Lys-8.	S0053: 2
HNHGV91	706695	5192	266 - 379	14944		S0053: 2
HNHGX33	496224	5193	23 - 262	14945	Thr-1 to Ser-6, Pro-28 to Trp-37, Phe-51 to Ile-61.	S0053: 2
HNHGX40	687120	5194	113 - 358	14946		S0053: 2
HNHGX41	711657	5195	384 - 614	14947		S0052: 1 and S0053: 1.
HNHGX52	727175	5196	47 - 385	14948	Pro-16 to Arg-25, Gln-31 to Pro-36, Ser-65 to Arg-75, Glu-77 to Val-82.	S0053: 2

HNHGXY55	683523	5197	71 - 310	14949	Phe-30 to Asp-36.	S0053: 2
HNHGXY83	781196	5198	3 - 251	14950		S0053: 1 and S0216: 1.
HNHGXY13	657253	5199	143 - 334	14951		S0053: 2
HNHGXY17	663921	5200	108 - 281	14952	Asp-1 to Pro-8, Leu-29 to Asp-35.	S0053: 2
HNHGXY18	859951	5201	175 - 423	14953	Pro-22 to His-39, Val-41 to Gly-48.	S0053: 2
HNHGXY19	835531	5202	2 - 349	14954	Asp-21 to Ser-27, Ser-76 to Ser-85.	S0053: 2
HNHGXY26	859949	5203	20 - 205	14955	Arg-6 to Cys-12, Leu-36 to Met-62.	S0053: 2 and S0216: 1.
HNHGXY29	690666	5204	87 - 368	14956	Arg-19 to Pro-33, Pro-39 to Ser-54.	H0271: 1 and S0053: 1.
HNHGXY42	713797	5205	1 - 243	14957	Leu-46 to Glu-55.	S0053: 2
HNHGXY47	720360	5206	45 - 374	14958	Asp-10 to Trp-15.	S0053: 2 and L0476: 1.
HNHGXY79	775209	5207	2 - 199	14959	Ala-1 to Lys-7, Leu-18 to Glu-35.	S0053: 2
HNHGXY86	785516	5208	129 - 1	14960		S0053: 2
HNHGXY91	840129	5209	209 - 433	14961	Gly-2 to Asn-11.	S0428: 1 and S0053: 1.
HNHGZ36	708131	5210	2 - 85	14962	Ala-14 to Val-28.	S0053: 2
HNHGZ63	742594	5211	209 - 421	14963		S0052: 1 and S0053: 1.
HNHHA21	496227	5212	3 - 278	14964	Gly-59 to Asp-78.	S0053: 2
HNHHA32	669915	5213	2 - 280	14965		H0271: 1 and S0053: 1.
HNHHA37	708709	5214	2 - 166	14966	Pro-45 to Glu-54.	S0053: 2
HNHHA68	753047	5215	258 - 497	14967		S0053: 2
HNHHA91	790198	5216	45 - 284	14968	Lys-14 to Cys-19.	S0053: 1 and S0216: 1.
HNHHA11	964993	5217	61 - 159	14969	Asp-10 to Gly-18.	S0053: 1 and S0216: 1.
HNHHA12	970719	5218	107 - 247	14970	Thr-6 to Ser-20.	S0053: 2
HNHHA24	677224	5219	141 - 332	14971		S0053: 2
HNHHA64	702697	5220	354 - 614	14972	Lys-16 to Ser-31.	S0053: 1, S0053: 1, H0521: 1 and L0752: 1.
HNHHC12	967088	5221	95 - 304	14973	Met-6 to Glu-13, Arg-15 to Trp-20.	S0053: 2
HNHHC17	860117	5222	83 - 316	14974		S0053: 3
HNHHC29	713800	5223	1 - 180	14975		S0053: 3 and L0589: 2.

HNHHHC33	699291	5224	100 - 186	14976			S0053: 2
HNHHHC36	707340	5225	159 - 37	14977	Cys-1 to Ile-11.		S0053: 3
HNHHHC46	719068	5226	1 - 252	14978	Gln-14 to Met-19.		S0053: 2
HNHHHC58	736069	5227	3 - 239	14979			S0053: 2
HNHHHC83	781197	5228	35 - 439	14980	Asp-1 to Ala-6, Pro-23 to Leu-30.		S0053: 2
HNHHHD35	707338	5229	41 - 190	14981	Ser-38 to Ser-48.		S0053: 2
HNHHHD61	741837	5230	153 - 419	14982	Lys-21 to Pro-41.		S0053: 3
HNHHHD67	751663	5231	152 - 319	14983	Thr-30 to Pro-40.		S0053: 3
HNHHHD82	779893	5232	223 - 405	14984	Met-6 to Arg-12.		S0053: 3
HNHHHE07	953408	5233	33 - 290	14985	Leu-11 to Gln-17.		S0053: 2
HNHHHE48	630223	5234	100 - 312	14986			S0053: 2
HNHHHE63	745100	5235	1 - 198	14987	Gly-1 to Arg-9, Ser-28 to Trp-33.		S0053: 2
HNHHHE80	774041	5236	35 - 205	14988			S0053: 2
HNHHHE01	916546	5237	3 - 320	14989	Asp-1 to Asn-10, Gly-18 to Trp-23, Gly-25 to Ser-33.		S0053: 2
HNHHHE33	698502	5238	1 - 261	14990	Gly-1 to Ala-12, Pro-14 to Gly-21.		S0053: 2
HNHHHE51	698490	5239	43 - 240	14991	Ala-1 to Pro-25.		S0053: 3
HNHHHE56	496204	5240	2 - 217	14992	Tyr-7 to Phe-24.		S0053: 2
HNHHHE58	859946	5241	80 - 247	14993			S0053: 3
HNHHHE53	745095	5242	68 - 373	14994	Pro-35 to Gly-43.		S0053: 1 and S0216: 1.
HNHHHE79	775205	5243	59 - 184	14995			S0053: 3
HNHHHE96	796402	5244	144 - 1	14996			S0053: 3
HNHHHG47	720361	5245	41 - 292	14997	Pro-25 to Pro-31.		S0053: 3
HNHHHG50	724411	5246	2 - 247	14998			S0053: 2
HNHHHC65	750266	5247	61 - 249	14999			S0053: 2
HNHHHI13	657251	5248	56 - 223	15000	Ala-1 to Cys-9, Pro-51 to Ser-56.		S0053: 4
HNHHHI42	713796	5249	28 - 725	15001			S0053: 2
HNHHHI57	734793	5250	134 - 313	15002			S0053: 2
HNHHHI10	964659	5251	3 - 188	15003			S0052: 1 and S0053: 1.
HNHHI128	859941	5252	1 - 351	15004	Gly-1 to Gly-18,		S0053: 2

HNHH134	706699	5253	37 - 171	15005	Asn-49 to Asn-72, Gly-86 to Gln-98.		
HNHH136	708132	5254	213 - 440	15006	Arg-17 to Thr-24.	S0053: 2	
HNHH165	750263	5255	171 - 386	15007	Glu-13 to Ser-20, Gln-42 to Thr-52.	S0140: 1 and S0053: 1.	
HNHH172	510619	5256	72 - 689	15008	Ile-3 to Lys-9, Leu-26 to Cys-31, Cys-39 to Gly-47.	S0053: 2	
HNHHK06	935517	5257	192 - 431	15009	Thr-7 to Arg-18, Arg-42 to Leu-48, Arg-51 to Arg-59, Pro-61 to Ala-73.	S0052: 1 and S0053: 1.	
HNHHK39	937598	5258	142 - 300	15010	Glu-16 to Tyr-25, Gln-69 to Thr-76.	H0635: 1, H0063: 1 and S0053: 1.	
HNHHK46	718081	5259	1 - 150	15011	Arg-15 to Leu-23, Lys-30 to Gln-53.	S0053: 4	
HNHHK62	741835	5260	1 - 228	15012	Gly-1 to Thr-30.	S0053: 2 and S0216: 1.	
HNHHK74	765601	5261	193 - 336	15013	Pro-23 to Leu-30.	S0053: 2	
HNHHK84	781980	5262	226 - 363	15014		S0053: 2	
HNHHK93	792326	5263	370 - 561	15015	Leu-1 to Gln-14.	S0053: 2 and S0216: 1.	
HNHL22	674617	5264	164 - 310	15016	Arg-12 to Leu-19.	S0053: 2	
HNHL70	757201	5265	107 - 322	15017	Arg-9 to Phe-15.	S0053: 3	
HNHL74	765598	5266	53 - 181	15018		S0053: 2	
HNHL92	756387	5267	3 - 134	15019	His-1 to Tyr-7, Thr-11 to Ser-17, Leu-33 to Cys-39.	S0053: 1 and S0216: 1.	
HNHM10	964656	5268	76 - 207	15020		S0053: 2	
HNHM17	661964	5269	2 - 130	15021	Pro-12 to Cys-20, Ser-23 to Asn-31.	S0053: 2	
HNHM25	678144	5270	76 - 285	15022		S0053: 2	
HNHM28	575451	5271	271 - 149	15023		L0666: 2, L0717: 1, H0057: 1, L0659: 1, S0053: 1 and L0748: 1.	
HNHM35	706667	5272	158 - 334	15024	Asn-9 to Cys-16, Pro-19 to Ser-31.	S0053: 2	

HNHHM37	708715	5273	20 - 160	15025	Asn-45 to Val-53, Leu-17 to Leu-25, Asn-42 to Gly-47.	S0053: 3	
HNHHM52	727166	5274	87 - 203	15026		S0053: 2	
HNHHM55	694373	5275	69 - 377	15027	Val-17 to Ala-22, Pro-49 to Ser-55.	S0053: 4 and L0592: 1.	
HNHHM70	757202	5276	140 - 259	15028		S0053: 2	
HNHHM80	880776	5277	46 - 285	15029	Ser-17 to Gly-23.	S0053: 4	
HNHHN03	920129	5278	159 - 362	15030		S0053: 2 and S0428: 1.	
HNHHN07	953393	5279	109 - 285	15031		S0053: 2	
HNHHN11	964657	5280	3 - 254	15032		S0053: 3	
HNHHN19	668681	5281	71 - 268	15033	Gln-1 to Asp-7, Pro-13 to Pro-18, Ser-34 to Ser-43, Pro-9 to Gly-23, Pro-27 to Thr-39.	S0053: 3	
HNHHN31	698035	5282	1 - 117	15034		S0053: 2	
HNHHN62	745700	5283	1 - 150	15035		S0053: 2	
HNHHN93	751659	5284	203 - 358	15036	Arg-24 to Ser-32, Pro-35 to Ser-42.	S0053: 6	
HNHHO08	953398	5285	214 - 330	15037		S0053: 3	
HNHHO15	424836	5286	2 - 169	15038	Asn-17 to Asn-28.	S0053: 2	
HNHHO49	722991	5287	101 - 280	15039		S0053: 2	
HNHHO66	727167	5288	77 - 259	15040	Ile-1 to Arg-10.	S0053: 2	
HNHHO79	774038	5289	1 - 159	15041		S0053: 4	
HNHHP02	920120	5290	2 - 142	15042	Arg-25 to Gly-32.	S0053: 2	
HNHHP04	935501	5291	26 - 241	15043		S0053: 5	
HNHHP16	661962	5292	91 - 357	15044	His-4 to Gly-9, Ser-13 to Arg-19, Thr-27 to Glu-32.	S0053: 2	
HNHHR04	935502	5293	13 - 129	15045		S0053: 4	
HNHHR46	720358	5294	137 - 346	15046	Arg-20 to Ala-26, Gly-28 to Thr-35, Ala-43 to Pro-55.	S0053: 4	
HNHHR61	741830	5295	75 - 230	15047	Pro-32 to Arg-38.	S0053: 2	
HNHHR93	775194	5296	65 - 235	15048		S0053: 3	

HNHHS46	956186	5297	514 - 684	15049	Leu-52 to Cys-57.	S0053: 2, S0114: 1, S0116: 1, H0580: 1, H0179: 1, H0271: 1, H0090: 1, H0264: 1, L0805: 1, L0527: 1 and L0367: 1.
HNHHS74	765584	5298	124 - 420	15050	Arg-3 to Ser-11.	S0053: 3
HNHHS76	788913	5299	188 - 313	15051	Thr-8 to Gly-16, Pro-19 to Asn-29, Gln-36 to Asn-42.	S0053: 3
HNHHS79	775192	5300	18 - 131	15052	Ser-8 to Gln-13.	S0053: 2 and S0216: 1.
HNHHT35	707342	5301	30 - 404	15053	Asn-6 to Thr-11,	S0053: 2
HNHHT55	465438	5302	3 - 431	15054	His-35 to Ala-41.	S0053: 2
HNHHT70	783033	5303	2 - 193	15055	Ala-3 to Lys-17, Ser-41 to Gly-50.	S0053: 2
HNHHU46	465395	5304	3 - 287	15056	Ser-1 to Glu-6, Glu-9 to Leu-14, Asn-39 to Asn-46, Pro-65 to His-71.	S0053: 2
HNHHW01	859935	5305	55 - 420	15057	Asn-60 to Leu-66, Pro-70 to Val-93, Ile-101 to Leu-107.	S0053: 2
HNHHW32	699255	5306	100 - 207	15058	S0053: 2	
HNHHW58	739288	5307	3 - 203	15059	Ala-30 to Gln-39, Gly-57 to Thr-67.	S0053: 2
HNHHW61	742071	5308	1 - 159	15060	S0053: 2	
HNHHW73	765588	5309	103 - 201	15061	S0053: 2	
HNHIA02	920094	5310	2 - 496	15062	S0053: 2	
HNHIA16	661931	5311	1 - 237	15063	Pro-19 to Ala-25, Ala-53 to Pro-64, Arg-71 to Cys-77.	
HNHIA20	669685	5312	64 - 195	15064	Gly-13 to Lys-20, Cys-32 to Tyr-49, Glu-60 to Thr-70.	S0053: 2
HNHIA34	706675	5313	204 - 10	15065	Arg-20 to Leu-38.	S0053: 5
HNHIA58	736046	5314	117 - 272	15066	Glu-1 to Gly-8.	S0053: 2

HNHIA64	745861	5315	112 - 360	15067			S0053: 2		
HNHIA73	559344	5316	10 - 270	15068	Ser-71 to Leu-76.		AR054: 9, AR051: 8, AR050: 8 S0053: 2		
	888195	9595	11 - 298	19347	Ser-71 to Leu-76.				
HNHIA94	970720	5317	56 - 217	15069	Glu-35 to Gly-47.		S0053: 2		
HNHIA95	908419	5318	46 - 399	15070	Lys-8 to Pro-14, Asn-47 to Cys-52, Glu-18 to Cys-24.		AR089: 7, AR061: 6 S0053: 4 S0053: 4 S0053: 2		
HNHIB22	967038	5319	2 - 169	15071	Gly-1 to Glu-8.				
HNHIB56	734763	5320	1 - 207	15072	Gly-21 to Pro-28.				
HNHIB77	781214	5321	1 - 363	15073	Ala-55 to Asp-69.		S0053: 2 and S0052: 1.		
HNHIB94	793210	5322	14 - 238	15074	Glu-35 to Gly-47.		S0053: 3		
HNHIC39	705375	5323	271 - 423	15075	Arg-11 to Ser-17.		S0053: 2		
HNHIC46	842003	5324	243 - 434	15076	Trp-1 to Lys-10.		H0416: 1 and S0053: 1.		
HNHIC96	779876	5325	148 - 384	15077	Pro-41 to Trp-46.		S0053: 2		
HNHID29	690646	5326	37 - 243	15078	Pro-31 to Tyr-39.		S0053: 2		
HNHID53	727151	5327	155 - 409	15079	Pro-38 to Pro-43.		S0053: 2		
HNHID55	731761	5328	92 - 268	15080	Lys-19 to Tyr-25, Gln-48 to Glu-58.		S0053: 3		
HNHID79	774044	5329	3 - 371	15081	Gly-16 to Arg-22, Thr-53 to Ala-61.		S0053: 2		
HNHIE75	765585	5330	13 - 204	15082	Gln-22 to Gly-28.		S0053: 2		
HNHIE82	921945	5331	217 - 666	15083	Gly-1 to Ile-6, Pro-14 to Pro-19.		S0053: 3, L0365: 1 and S0052: 1.		
HNHIG01	916503	5332	2 - 244	15084	Arg-2 to Pro-9, Ser-11 to Lys-26, Ser-35 to Thr-50, Phe-74 to Asp-81.		S0053: 2		
HNHIG13	465404	5333	2 - 181	15085			S0053: 3	16p11.2	147781, 172471, 182381
HNHIG19	668657	5334	3 - 431	15086	Glu-2 to Gln-9, Ala-20 to Trp-27, Ser-44 to Ala-51, Pro-64 to Ser-69, Ala-76 to Pro-81.		S0053: 2		



HNHI037	708713	5335	31 - 285	15087	Asn-39 to Arg-44.	S0053: 3	
HNHI068	753025	5336	284 - 412	15088		S0053: 2	
HNHI071	465407	5337	36 - 371	15089	Pro-78 to Arg-92.	S0053: 2	
HNHI023	675262	5338	2 - 244	15090	Asn-10 to Cys-17, Pro-19 to Arg-27, Gln-39 to Pro-45.	S0053: 3	
HNHI027	681727	5339	122 - 331	15091	His-37 to Lys-43.	S0053: 2	
HNHI029	689891	5340	16 - 195	15092	Glu-11 to His-22, Pro-31 to Gln-38.	S0053: 2	
HNHI046	720333	5341	128 - 415	15093		S0053: 2	
HNHI058	739290	5342	70 - 222	15094	Arg-8 to Lys-16, Pro-40 to Arg-51.	S0053: 2	
HNHI066	684531	5343	34 - 174	15095		H0271: 1 and S0053: 1.	
HNHI071	760371	5344	179 - 325	15096	Trp-24 to Ser-32.	S0053: 2	
HNHI073	765591	5345	3 - 236	15097	His-1 to Trp-10.	S0053: 2	
HNHI082	779874	5346	84 - 257	15098		S0053: 3	
HNHI096	734114	5347	153 - 422	15099		S0053: 1 and S0216: 1.	
HNHI084	775407	5348	100 - 246	15100		S0053: 2	
HNHI014	967087	5349	1 - 141	15101		S0053: 3	
HNHI095	795877	5350	69 - 290	15102		S0053: 1 and S0216: 1.	
HNHI013	657249	5351	77 - 403	15103	Thr-7 to Arg-14, Pro-33 to Ser-38, Gly-45 to Lys-75.	S0053: 2	
HNHI035	707339	5352	147 - 299	15104	Asn-3 to Trp-14, Gly-31 to Lys-39, Val-46 to Asp-51.	S0053: 2	
HNHI015	859926	5353	154 - 417	15105		S0216: 2	
HNHI060	739885	5354	302 - 93	15106	Ser-17 to Val-31.	S0216: 2	
HNHI024	859923	5355	223 - 372	15107		S0216: 2	
HNHI072	761427	5356	115 - 225	15108		S0216: 2	
HNHI088	786555	5357	1 - 177	15109	Gly-6 to Leu-13.	S0216: 2	
HNHI073	762011	5358	51 - 443	15110	Asp-15 to Ser-20, Arg-40 to Gly-46.	AR061: 7, AR089: 4 S0216: 2	
HNHI030	793658	5359	1 - 138	15111		S0216: 2 and S0428: 1.	
HNHI048	721149	5360	167 - 358	15112	Gln-51 to Asp-62.	S0216: 2	

HNHKP72	761432	5361	526 - 726	15113	Ser-8 to Ala-15.	S0216: 2	
HNHK569	750487	5362	92 - 241	15114	Thr-16 to Ala-24.	S0053: 1 and S0216: 1.	
HNHK575	766926	5363	79 - 324	15115	Asn-33 to Asn-38.	S0216: 2	
HNHK706	934643	5364	30 - 137	15116	Ser-6 to Asn-18.	S0216: 2	
HNHK175	766924	5365	3 - 119	15117		S0216: 2	
HNHK167	751205	5366	205 - 375	15118	Lys-26 to Met-31.	S0216: 2	
HNHKW47	786020	5367	14 - 193	15119	Glu-36 to Ser-45.	H0402: 1 and S0216: 1.	
HNHKW76	767917	5368	42 - 290	15120	Pro-43 to Gln-50.	S0216: 1 and H0445: 1.	
HNHKW81	761429	5369	247 - 504	15121	Gln-1 to Glu-6.	S0216: 2	
HNHKW83	780650	5370	1 - 531	15122	Arg-22 to Gly-29.	S0216: 2	
					Gln-32 to His-37.		
					Ala-63 to His-69.		
					Pro-94 to Ala-110.		
					Ser-136 to Gln-145.		
HNHKX10	963575	5371	251 - 409	15123	Ser-1 to Lys-7.	S0216: 3	
HNHKX38	796804	5372	334 - 477	15124	Glu-15 to Val-23.	S0002: 1 and S0216: 1.	
HNHKX47	789625	5373	163 - 387	15125		S0428: 1 and S0216: 1.	
HNHKX77	771530	5374	78 - 377	15126		S0216: 2	
HNHKZ11	966164	5375	85 - 288	15127	Asn-35 to Leu-41.	S0216: 2	
					Tyr-45 to Phe-50.		
					Thr-58 to Thr-67.		
HNHLA08	958422	5376	107 - 340	15128	Ser-15 to Leu-21.	S0428: 1 and S0216: 1.	
HNHLA16	784264	5377	557 - 814	15129		L0764: 1, S0216: 1 and H0522: 1.	
HNHLA55	754480	5378	1 - 420	15130	Ala-63 to Cys-71.	S0216: 2	
					Pro-80 to Gly-89.		
HNHLA71	761430	5379	388 - 585	15131	Pro-102 to Gly-116.		
					Glu-10 to Glu-21.	S0216: 2	
					Ser-39 to Ala-44.		
					Gly-48 to Met-53.		
HNHLA89	786461	5380	2 - 310	15132	Arg-16 to Gly-23.	H0254: 1 and S0216: 1.	
					Trp-60 to Trp-65.		
HNHLA90	970724	5381	241 - 609	15133	Gln-33 to Gly-42.	S0052: 1, S0053: 1 and S0216: 1.	
					Ala-59 to Arg-72.		

HNHLB08	958416	5382	92 - 268	15134	Gly-95 to Ser-104, Gln-24 to Pro-30, Ser-52 to Gly-59.	S0216: 2	
HNHLC69	754466	5383	84 - 356	15135	Ser-38 to Ala-66.	S0216: 2	
HNHLD08	859857	5384	2 - 319	15136	Leu-38 to Gly-46, Leu-49 to Glu-56, Pro-64 to Ser-70.	S0216: 2	
HNHLD13	805983	5385	208 - 378	15137	Gly-1 to Ser-6.	S0216: 2	
HNHLD37	859859	5386	123 - 353	15138	Val-7 to Ser-15, Pro-29 to Ser-35.	S0053: 1 and S0216: 1.	
HNHLD81	779445	5387	149 - 301	15139	Lys-3 to His-8.	S0216: 2	
HNHLE72	966149	5388	130 - 246	15140		S0216: 2	
HNHLF25	859856	5389	1 - 258	15141		S0053: 1 and S0216: 1.	
HNHLF33	908449	5390	1 - 255	15142	Phe-5 to Gly-16, Thr-18 to Met-25, Lys-55 to Ser-63.	S0053: 1 and S0216: 1.	
HNHLF58	859858	5391	3 - 233	15143	Thr-2 to Thr-12, Val-21 to Leu-36, Gln-49 to Ser-56.	S0216: 2	
HNHLP56	883321	5392	100 - 213	15144		S0053: 1 and S0216: 1.	
HNHLP69	754440	5393	73 - 180	15145		S0053: 1 and S0216: 1.	
HNHLP77	967239	5394	176 - 466	15146		S0052: 1 and S0216: 1.	
HNHLQ36	760460	5395	161 - 454	15147		S0053: 1 and S0216: 1.	
HNHLQ61	795942	5396	119 - 289	15148		S0052: 1 and S0216: 1.	
HNHLQ80	775621	5397	17 - 253	15149		H0179: 2 and S0216: 1.	
HNHLR73	761855	5398	3 - 179	15150	Gly-53 to Cys-59.	S0216: 2	
HNHLR91	789786	5399	160 - 276	15151		S0216: 2	
HNHLR04	927077	5400	1 - 168	15152	Thr-18 to Gly-24, Asn-39 to Gly-49.	S0216: 2	
HNHLS53	827329	5401	45 - 176	15153	Gly-28 to Val-34.	S0216: 2	
HNHLT49	784983	5402	112 - 5	15154	Lys-1 to Gly-14.	S0216: 2	
HNHLV84	782319	5403	99 - 230	15155		S0216: 2	
HNHLW93	791782	5404	227 - 448	15156		S0002: 1 and S0216: 1.	
HNHLX82	779298	5405	2 - 151	15157	Gln-37 to Lys-50.	S0216: 2	
HNHMC78	777969	5406	200 - 319	15158		S0216: 2	

HNHMD85	876673	5407	7 - 159	15159	Tyr-6 to Gln-28.	S0053: 1 and S0216: 1.
HNHNM25	784479	5408	199 - 397	15160	Pro-38 to Leu-47.	L0747: 2, S0052: 1 and S0216: 1.
HNHMO93	791798	5409	32 - 145	15161	Leu-17 to Asp-25.	S0216: 2
HNHMR04	927056	5410	100 - 420	15162		S0053: 1 and S0216: 1.
HNHMR43	937561	5411	216 - 362	15163		S0053: 1 and S0216: 1.
HNHMR73	967614	5412	240 - 428	15164	Lys-7 to Ser-20, Ser-32 to Ser-37.	S0114: 1 and S0216: 1.
HNHMS77	916609	5413	1 - 144	15165		S0053: 1 and S0216: 1.
HNHMS93	791807	5414	3 - 167	15166	Arg-21 to Trp-28, Thr-30 to Gly-36.	H0421: 1 and S0216: 1.
HNHMT53	925689	5415	205 - 339	15167		S0216: 2
HNHMT54	790765	5416	132 - 263	15168	Phe-1 to Ser-12, Thr-18 to Thr-27.	S0428: 1 and S0216: 1.
HNHMT90	937564	5417	123 - 230	15169		S0216: 2
HNHMD91	789785	5418	2 - 130	15170	Thr-23 to Gln-28.	H0265: 1 and S0216: 1.
HNHMTW83	780558	5419	30 - 257	15171	Arg-3 to Asn-10, Lys-27 to Leu-32, Met-35 to Ile-41, Pro-47 to Asn-54.	S0053: 1 and S0216: 1.
HNHMX45	953411	5420	2 - 379	15172		H0402: 1 and S0216: 1.
HNHMY43	859841	5421	1 - 225	15173	Pro-19 to Gly-27.	S0216: 2
HNHMY45	958409	5422	24 - 239	15174	Glu-25 to Cys-33.	S0216: 2
HNHMY59	883324	5423	113 - 400	15175		S0216: 2
HNHMY71	761436	5424	3 - 236	15176	Pro-31 to Gly-36.	S0216: 2
HNHMT07	952290	5425	115 - 369	15177	Gly-2 to Cys-10.	S0216: 2, L0361: 2 and L0742: 1.
HNHMT59	761661	5426	165 - 278	15178		S0216: 1 and H0445: 1.
HNHMT86	784999	5427	1 - 93	15179	Asn-7 to Glu-17, Ser-24 to Lys-31.	S0216: 2
HNHMT89	786457	5428	146 - 313	15180		S0216: 2
HNHNA02	918720	5429	73 - 228	15181	Ala-22 to Lys-30.	S0053: 1 and S0216: 1.
HNHNA69	754452	5430	11 - 160	15182		S0216: 2
HNHNB77	771523	5431	1 - 243	15183	Ser-31 to Lys-36, Ser-76 to Ile-81.	S0053: 1 and S0216: 1.

HNHNC82	779321	5432	146 - 310	15184			S0216: 2	
HNHND80	775612	5433	234 - 431	15185			S0053: 1 and S0216: 1.	
HNHNE11	966146	5434	3 - 95	15186			S0216: 2	
HNHNE59	771529	5435	190 - 351	15187			S0216: 3	
HNHNE83	780628	5436	2 - 346	15188		Asp-1 to Arg-6, Gln-53 to Ser-60, Ile-66 to Lys-72, Glu-76 to Lys-85, Gly-91 to Ser-99.	H0271: 3, H0250: 2, H0635: 2, S0216: 2, H0254: 1, H0638: 1, H0069: 1, H0416: 1, H0090: 1, L0761: 1, L0800: 1, L0776: 1, L0789: 1 and S0052: 1.	
HNHNG73	761849	5437	226 - 456	15189			S0052: 1 and S0216: 1.	
HNHNI10	963571	5438	1 - 225	15190			S0116: 1 and S0216: 1.	
HNHNI14	923079	5439	44 - 178	15191			S0216: 2	
HNHNI08	859837	5440	3 - 242	15192		Thr-23 to Thr-28, His-34 to Met-39, Val-69 to Arg-76, Ser-12 to Leu-20.	S0053: 1 and S0216: 1.	
HNHNE71	775635	5441	3 - 179	15193		Met-4 to Gly-9, Ser-12 to Leu-20.	S0216: 2	
HNHNL70	756633	5442	147 - 341	15194			S0216: 2	
HNHNN56	859834	5443	144 - 371	15195		Pro-38 to Gln-44.	L0368: 1, S0053: 1 and S0216: 1.	
HNHNO84	782328	5444	140 - 253	15196			S0216: 1 and H0443: 1.	
HNHNP80	775631	5445	54 - 185	15197			S0053: 1 and S0216: 1.	
HNHNP86	784788	5446	122 - 334	15198			S0216: 2	
HNHNU23	968911	5447	179 - 436	15199		Met-1 to Ala-12.	S0216: 2 and L0748: 1.	
HNHNU27	920254	5448	272 - 424	15200		Tyr-9 to Arg-14, Glu-22 to Tyr-34.	H0402: 1 and S0216: 1.	
HNHNV52	859831	5449	82 - 213	15201		Arg-12 to Tyr-17.	S0216: 2	
HNHNV64	859832	5450	1 - 222	15202		Lys-14 to Pro-19.	S0216: 2	
HNHNX04	927027	5451	1 - 168	15203			S0052: 1, S0428: 1, S0216: 1 and H0444: 1.	
HNHNX88	959011	5452	2 - 157	15204			S0052: 1 and S0216: 1.	
HNHOA03	923052	5453	122 - 457	15205			H0551: 1 and S0216: 1.	
HNHOC03	922892	5454	164 - 280	15206			S0052: 1 and S0216: 1.	
HNHOD01	915341	5455	28 - 219	15207		Arg-1 to Tyr-6.		

HNHOD62	852995	5456	143 - 319	15208	Leu-27 to Leu-41.	H0389: 1, S0052: 1 and S0216: 1.	
HNHOB53	767329	5457	285 - 422	15209		S0053: 1 and S0216: 1.	
HNHOF03	922028	5458	3 - 197	15210	Ser-10 to Ser-15, Glu-44 to Phe-65.	T0041: 1, S0428: 1 and S0216: 1.	
HNHOF07	952291	5459	90 - 326	15211	Lys-1 to Thr-18, Leu-28 to Arg-34, His-46 to Thr-59, Pro-62 to Glu-69.	T0041: 1, S0216: 1 and H0576: 1.	
HNHOF92	790934	5460	158 - 358	15212	Gly-19 to Lys-29.	H0457: 1 and S0216: 1.	
HNHOC84	782316	5461	331 - 543	15213	Lys-28 to Cys-37, Cys-41 to Pro-48, Leu-61 to Thr-69.	S0216: 2	
HNHOC86	785004	5462	128 - 394	15214	Pro-1 to Ala-6, Pro-26 to Gly-31, Arg-50 to Leu-56, Ser-69 to Gly-76, Ala-80 to Glu-89.	S0216: 2	
HNHOB10	963562	5463	298 - 558	15215	Tyr-28 to Ala-37.	S0216: 2	
HNHOF03	923072	5464	464 - 712	15216	Cys-13 to Leu-24.	S0216: 2 and L0749: 1.	
HNHOM92	792328	5465	179 - 310	15217	Phe-12 to Arg-20.	H0402: 1 and S0216: 1.	
HNHOB16	959616	5466	549 - 845	15218		H0423: 2, H0486: 1, S0216: 1 and L0753: 1.	
HNHOB25	859826	5467	229 - 408	15219	Leu-12 to Asp-17, Lys-23 to Glu-29.	S0053: 1 and S0216: 1.	
HNHOB74	915462	5468	24 - 467	15220	Thr-13 to Arg-22, Arg-78 to Pro-83.	H0254: 1, H0264: 1 and S0216: 1.	
HNHOB087	787562	5469	72 - 260	15221	Glu-5 to Pro-11.	S0216: 2	
HNHOB10	963539	5470	298 - 477	15222	Ala-1 to Trp-7, Lys-21 to Ala-28.	S0053: 1 and S0216: 1.	
HNHOB76	767877	5471	3 - 341	15223	Gly-1 to Trp-12, Lys-14 to Leu-19, Lys-52 to Ser-59.	S0216: 2	
HNHOB70	756593	5472	3 - 323	15224	Met-19 to Gly-28, Gly-33 to Ser-51.	H0402: 1 and S0216: 1.	

HNHOS75	766736	5473	246 - 377	15225	Asn-56 to Gly-63, Asp-83 to Tyr-88.	S0216: 2	
HNHOT10	903631	5474	310 - 107	15226		S0216: 2	
HNHOT11	923065	5475	258 - 482	15227		S0216: 2	
HNHOT95	795331	5476	100 - 2	15228		S0216: 2	
HNHOT20	773797	5477	28 - 138	15229	Ala-12 to Ser-18, Phe-31 to His-37.	S0053: 1 and S0216: 1.	
HNHOT68	806090	5478	2 - 151	15230		S0216: 2	
HNHOT94	793514	5479	1 - 282	15231	Gly-24 to Ser-31.	S0216: 2	
HNHOT09	854882	5480	367 - 705	15232	Gly-1 to Ser-6, Pro-41 to Gly-48, Ser-79 to Arg-92, Pro-104 to Asn-112.	S0216: 2 and L0589: 1.	
HNHOT10	963545	5481	2 - 307	15233	Pro-3 to Ser-15, Gly-57 to Gly-63, Ser-89 to His-99.	S0216: 3	
HNHOTX31	859820	5482	33 - 491	15234		S0216: 2	
HNHOTX89	786411	5483	30 - 254	15235	Ser-38 to His-57.	S0216: 2	
HNHOTZ04	923013	5484	68 - 298	15236	Lys-1 to Pro-8, Leu-11 to Phe-20.	S0216: 2	
HNHOTZ90	787488	5485	106 - 657	15237	Ser-27 to His-32, Pro-36 to Gly-41, Gly-49 to His-55, Trp-84 to Lys-96, Ser-118 to Gln-130, Pro-144 to Gly-157.	S0053: 1 and S0216: 1.	
HNHPC08	952246	5486	28 - 198	15238	Arg-21 to Val-38, Ala-42 to Leu-47.	S0216: 2	
HNHPC36	859819	5487	41 - 259	15239		S0216: 2	
HNHPC72	772970	5488	38 - 340	15240	Arg-41 to Val-47, Ala-80 to Gln-89.	S0216: 2	
HNHPC04	974103	5489	59 - 325	15241	Gly-1 to Val-8, Phe-12 to Arg-30, Arg-43 to His-58, Gln-60 to Val-66.	S0053: 2 and S0216: 1.	

HNHPD07	952244	5490	174 - 389	15242	Leu-83 to Glu-88.		
HNHPD13	859815	5491	2 - 322	15243	Gln-23 to Lys-33.	S0216: 2	
					His-46 to Cys-51,	S0216: 2	
					Pro-61 to Leu-67,		
					Thr-76 to Ser-81,		
					Pro-83 to Cys-89.		
HNHPB6	784919	5492	3 - 311	15244		S0216: 2	
HNHPG61	784432	5493	27 - 458	15245	Ala-1 to Gly-13,	S0052: 1 and S0216: 1.	
					Gln-48 to Ser-60,		
					His-80 to Ser-85.		
HNHPG66	859812	5494	299 - 484	15246	Cys-18 to His-23.	S0428: 1 and S0216: 1.	
HNHPG85	783821	5495	185 - 367	15247	Ile-33 to Leu-38.	S0053: 1 and S0216: 1.	
HNHPH29	934456	5496	233 - 451	15248	Ser-33 to Lys-38,	S0216: 2	
					Arg-45 to Thr-51.		
HOIAE91	935322	5497	101 - 520	15249	Ser-30 to Phe-37,	H0250: 3, S3016: 1, H0402:	
					Ser-39 to Leu-45,	1, H0625: 1, L0509: 1,	
					Asp-53 to Thr-60,	L0791: 1, S0292: 1, H0521:	
					Glu-74 to Gly-79,	1, H0436: 1 and S3020: 1.	
					Gly-86 to Lys-100,		
					Gln-106 to Ser-124.		
HPSAA31	739041	5498	29 - 280	15250	Tyr-1 to Lys-9,	H0305: 2, H0589: 1 and	
					Glu-29 to Ser-36,	H0074: 1.	
					Ser-52 to Asn-60.		
HPSAA30	723558	5499	70 - 297	15251	Gln-1 to Lys-6,	H0074: 2	
					Gly-18 to Asp-24.		
HPSAA63	536776	5500	87 - 182	15252		H0074: 3	
HPSAB25	677474	5501	275 - 192	15253		H0074: 2	
HSATA03	925082	5502	49 - 174	15254		S0114: 1 and H0264: 1.	
HSATA86	683251	5503	78 - 227	15255	Ser-1 to Gln-11,	S0114: 2 and L0748: 2.	
					Ile-36 to Glu-50.		
HSATE44	666207	5504	129 - 338	15256	His-4 to Glu-9,	S0114: 1 and H0318: 1.	
					Gly-32 to Ser-42.		
HSATE89	531280	5505	148 - 375	15257	Leu-5 to Lys-12,	S0114: 2	
					Lys-27 to Arg-32.		
HSATF05	907593	5506	15 - 200	15258	Glu-1 to Ser-7.	S0114: 1, H0306: 1 and	
					Thr-17 to Ser-24.	L0761: 1.	



HSATF79	781718	5507	2 - 205	15259		S0114: 1 and H0521: 1.
HSATJ56	716434	5508	240 - 404	15260		S0114: 1 and H0445: 1.
HSATJ84	781405	5509	196 - 315	15261		S0114: 2 and L0748: 1.
HSATM25	688006	5510	173 - 418	15262		S0114: 1 and H0436: 1.
HSATM79	677117	5511	3 - 437	15263	Pro-39 to Lys-54.	S0114: 1 and H0591: 1.
HSATQ28	866951	5512	3 - 164	15264		AR089: 120, AR061: 12 S0114: 2, H0422: 2 and L0748: 1.
HSATQ76	765376	5513	319 - 582	15265	Val-6 to Leu-23.	S0114: 1, H0581: 1 and L0756: 1.
HSATR17	888871	5514	255 - 389	15266		AR051: 5, AR054: 3, AR050: 0 S0114: 1 and H0272: 1.
HSATR27	713143	5515	1 - 180	15267	Arg-7 to Gly-12.	S0114: 3
HSATR32	699586	5516	2 - 256	15268		S0114: 2 and H0581: 1.
HSATR76	659994	5517	120 - 305	15269		H0445: 2, S0114: 1 and L0745: 1.
HSATS23	524369	5518	19 - 123	15270		S0114: 2
HSATS29	689823	5519	116 - 214	15271		S0114: 1 and H0444: 1.
HSATS56	732640	5520	63 - 242	15272	Thr-38 to Ser-47.	S0114: 1 and H0576: 1.
HSATP96	796565	5521	252 - 422	15273	Tyr-14 to Ser-25.	S0114: 1 and H0318: 1.
HSATV34	732184	5522	459 - 325	15274		S0114: 1 and H0423: 1.
HSATW22	531171	5523	138 - 266	15275		S0114: 2, L0758: 2, L0041: 5 1, L0659: 1 and L0747: 1.
HSATX46	866959	5524	2 - 250	15276	Glu-12 to His-20.	S0114: 2 and S0436: 1.
HSUAU88	757624	5525	86 - 313	15277	Gly-9 to Asn-15, Glu-29 to Phe-41, Trp-65 to Cys-70.	S0114: 1 and H0422: 1.
HSUAUB19	954055	5526	112 - 204	15278	Arg-11 to Ser-17, Ser-24 to Cys-29.	S0114: 2
HSUAUB90	733714	5527	3 - 131	15279		H0265: 1 and S0114: 1.
HSAUD05	932502	5528	1 - 183	15280	Ser-6 to Glu-11.	S0114: 2 and H0264: 1.
HSAUD45	531170	5529	1 - 237	15281		S0114: 1 and S0053: 1.
HSUAUE25	571385	5530	64 - 177	15282	Leu-26 to Cys-33.	S0114: 1 and S0134: 1.
HSUAUE40	866933	5531	124 - 405	15283		S0114: 2

HSAUF18	527038	5532	17 - 328	15284	Leu-16 to Pro-22.	S0114: 1, H0179: 1, S0052: 1 and L0751: 1.
HSAUG15	953628	5533	690 - 836	15285	Lys-18 to Ile-23.	L0766: 3, S0114: 1, H0063: 1, L0761: 1, L0805: 1, L0776: 1, L0527: 1 and L0744: 1.
HSAUH65	953873	5534	177 - 278	15286		S0114: 2
HSAUH69	870437	5535	528 - 758	15287	Leu-1 to Cys-6.	L0766: 4, L0740: 4, L0777: 2, S0114: 1 and S0134: 1.
HSAUI05	856886	5536	156 - 368	15288		S0114: 1 and H0254: 1.
HSAUI26	950714	5537	110 - 211	15289		S0114: 1 and H0551: 1.
HSAUL67	866919	5538	204 - 380	15290		S0114: 1 and H0254: 1.
HSAUQ94	526936	5539	82 - 192	15291	His-6 to Ser-12.	S0114: 3
HSAUT77	557848	5540	2 - 163	15292	Asn-24 to Asp-32.	
HSAUW10	967600	5541	121 - 360	15293	Arg-31 to Gly-37.	S0114: 2
				15293	Leu-6 to Gly-12, Pro-14 to Ser-20, Thr-38 to Ile-46.	S0114: 2
HSAUW71	537544	5542	77 - 274	15294	Ser-1 to Thr-6.	S0114: 2
HSAUZ38	744899	5543	215 - 463	15295	Gly-58 to Gly-66.	S0114: 3, H0445: 3, L0002: 1 and L0803: 1.
HSAUZ57	685253	5544	388 - 579	15296		S0114: 2, H0402: 1 and L0748: 1.
HSAVA44	866900	5545	1 - 210	15297	His-22 to Thr-28.	S0114: 2
HSAVA61	742073	5546	1 - 153	15298	Phe-8 to His-16.	S0114: 1, H0087: 1 and L0731: 1.
HSAVB05	932496	5547	41 - 157	15299	Arg-1 to Pro-13.	S0114: 1 and S0116: 1.
HSAVB19	866899	5548	5 - 322	15300	Ala-40 to Gly-49.	S0114: 2
HSAVC41	584978	5549	1 - 132	15301	Thr-1 to Asp-10.	S0114: 2
HSAVC76	967286	5550	173 - 325	15302		S0114: 1 and S0134: 1.
HSAVF35	932462	5551	84 - 257	15303	Asp-25 to Phe-35.	H0265: 1 and S0114: 1.
HSAVG81	959949	5552	335 - 547	15304	Leu-41 to Phe-47.	S0114: 2, H0439: 1, L0794: 1, L0777: 1 and L0599: 1.
HSAVH17	417452	5553	37 - 186	15305	Val-51 to Arg-59.	S0114: 2
HSAVH95	574243	5554	142 - 273	15306	Cys-34 to Thr-39.	S0114: 1, H0318: 1 and

HSADV144	715837	5555	82 - 225	15307	Lys-1 to Ser-6.	L0749: 1.	
HSADV146	717837	5556	245 - 460	15308	Tyr-11 to Trp-18, Arg-41 to Val-53.	S0114: 1 and H0445: 1. S0114: 1 and S0002: 1.	
HSADV159	579060	5557	110 - 376	15309		S0114: 1 and H0063: 1.	
HSADV177	739521	5558	1 - 177	15310		S0114: 2	
HSADV143	714418	5559	174 - 503	15311	Phe-34 to Cys-39, Pro-77 to Tyr-82, Arg-105 to Arg-110.	L0748: 6, L0749: 2, S0114: 1 and S0426: 1.	
HSADV007	935797	5560	81 - 233	15312	Lys-8 to Arg-15, Thr-21 to Lys-36.	S0114: 1, H0402: 1 and L0521: 1.	
HSADV017	920412	5561	221 - 430	15313	Ser-11 to Cys-21.	S0114: 1 and H0445: 1.	
HSADV037	574709	5562	2 - 265	15314	Gly-1 to Ser-18.	H0556: 1, S0114: 1 and H0090: 1.	
HSADV053	531111	5563	115 - 249	15315		S0114: 2	
HSADV082	531398	5564	131 - 60	15316		S0114: 1 and H0179: 1.	
HSADV10	964950	5565	240 - 416	15317		S0114: 2	
HSADV046	574784	5566	3 - 254	15318	Ala-1 to Arg-18.	S0114: 1, H0271: 1 and L0657: 1.	
HSADV056	522431	5567	75 - 347	15319		S0114: 2	
HSADV06	936049	5568	11 - 91	15320		S0114: 2	
HSADV074	827090	5569	2 - 112	15321	Lys-22 to Lys-27.	S0114: 2	
HSADV17	574269	5570	3 - 71	15322	Gln-2 to Thr-13.	S0114: 2	
HSADV846	526756	5571	1 - 249	15323		S0114: 2	
HSADV576	866888	5572	2 - 94	15324	Gln-7 to Ser-19.	S0114: 2	
HSADV118	920565	5573	107 - 328	15325		S0114: 1 and H0305: 1.	
HSADV124	577549	5574	175 - 474	15326		S0114: 3, L0776: 1, H0521: 1 and H0423: 1.	
HSADV195	925582	5575	38 - 232	15327	Glu-39 to Lys-47.	S0114: 1, H0306: 1 and L0527: 1.	
HSADV111	967490	5576	17 - 142	15328		S0114: 2	
HSADV114	920695	5577	91 - 378	15329		S0114: 2	
HSADV144	574267	5578	333 - 455	15330		S0114: 2	
HSADVX96	744614	5579	49 - 282	15331	Gln-4 to Lys-16.	S0114: 1 and H0580: 1.	
HSADVY34	574287	5580	3 - 221	15332	Arg-34 to Glu-40.	S0114: 3 and S0134: 1.	

HSAVY58	526958	5581	36 - 176	15333			S0114: 2 and H0264: 1.
HSAVZ35	842039	5582	239 - 364	15334			H0159: 1 and S0114: 1.
HSAVZ65	574192	5583	158 - 328	15335			S0114: 2
HSAWA25	577281	5584	16 - 177	15336	Asn-14 to His-21.		H0445: 2, S0114: 1 and L0766: 1.
HSAWC89	785988	5585	116 - 913	15337	Asn-18 to Leu-23, Tyr-41 to Gly-46, Asp-101 to Asp-110.		H0265: 1, S0114: 1, H0421: 1 and L0596: 1.
HSAWG75	574223	5586	58 - 159	15338	Leu-1 to Cys-7.		S0114: 1 and H0318: 1.
HSAWH47	720535	5587	328 - 522	15339	Phe-55 to Trp-61.		S0114: 1, H0638: 1 and L0748: 1.
HSAWI18	666842	5588	150 - 335	15340	Thr-33 to Ser-41.		S0114: 1, H0444: 1 and H0543: 1.
HSAWI50	742713	5589	2 - 226	15341	Val-7 to Val-15.		S0114: 1 and H0607: 1.
HSAWI36	866874	5590	478 - 837	15342	Thr-1 to Lys-12.		S0114: 2, L0743: 2, L0638: 1, L0800: 1, L0659: 1, L0758: 1 and L0759: 1.
HSAWI93	751429	5591	2 - 148	15343	Val-10 to His-15, Val-35 to Leu-40.		S0114: 1 and H0444: 1.
HSAWL80	792893	5592	187 - 324	15344			S0114: 2
HSAWN67	883825	5593	189 - 665	15345			S0114: 1 and H0436: 1.
HSAWT91	522474	5594	104 - 178	15346			S0114: 1 and S0053: 1.
HSAWU96	577267	5595	147 - 257	15347			S0114: 1, H0444: 1 and H0445: 1.
HSAWV18	666841	5596	5 - 103	15348			S0114: 1, H0305: 1 and L0766: 1.
HSAWY11	967489	5597	237 - 365	15349			S0114: 1 and H0445: 1.
HSAXB47	720536	5598	3 - 578	15350	Gly-15 to Phe-21, Asp-79 to Glu-93, Gly-103 to Phe-111.		S0114: 1, S0426: 1 and H0521: 1.
HSAXB84	574172	5599	117 - 416	15351	Asp-8 to Cys-20, Arg-41 to Asp-58.		S0114: 2
HSAXB95	796006	5600	2 - 328	15352	Pro-4 to Pro-11.		S0114: 1 and S0216: 1.
HSAXC60	579044	5601	122 - 286	15353			S0114: 1, S0134: 1 and H0457: 1.
HSAXD03	924900	5602	162 - 254	15354			S0114: 2

HSAXD08	959939	5603	155 - 283	15355	Pro-11 to Thr-20.	S0114: 1 and H0341: 1.	
HSAXD18	575543	5604	97 - 2	15356		S0114: 4	
HSAXD73	574274	5605	178 - 396	15357	Lys-12 to Leu-17, Glu-53 to Cys-61, Gly-29 to Asp-36.	S0114: 2 and L0754: 1.	
HSAXD75	526777	5606	177 - 332	15358		S0114: 2	
HSAXF03	924899	5607	34 - 222	15359		S0114: 2 and L0766: 1.	
HSAXG18	574165	5608	190 - 297	15360		S0114: 1 and H0090: 1.	
HSAXG30	574280	5609	3 - 236	15361	Ser-40 to Ser-47.	S0114: 2	
HSAXI07	953871	5610	16 - 105	15362		S0114: 2	7q31.1-q31.2 126650, 126650, 150240, 180105, 222800, 246900, 602421, 602421, 602421
HSAXI47	574159	5611	340 - 456	15363		S0114: 1 and H0063: 1.	
HSAXI62	531114	5612	59 - 211	15364	His-37 to Pro-51.	S0114: 2	
HSAXI25	964753	5613	38 - 184	15365	Lys-26 to Ser-32.	S0114: 1, L0748: 1 and H0445: 1.	
HSAXI83	866840	5614	1 - 138	15366	Thr-30 to Ala-36.	S0114: 2	
HSAXM33	866837	5615	1 - 291	15367	Ile-18 to Pro-25, Val-33 to Glu-42, Phe-46 to Val-51, Pro-82 to Asp-97.	S0114: 2	
HSAXM34	526939	5616	3 - 254	15368	Gly-14 to His-26.	S0114: 2 and S0116: 1.	
HSAXM44	574173	5617	1 - 150	15369		S0114: 2	
HSAXM68	754061	5618	167 - 322	15370		S0114: 2	
HSAXM91	784470	5619	120 - 221	15371	Asp-27 to Ser-34.	S0114: 2	
HSAXN51	574286	5620	188 - 445	15372	Pro-34 to Lys-47.	S0114: 2, S0216: 2 and S0134: 1.	
HSAXO52	726053	5621	419 - 547	15373	Gln-32 to Asn-37.	S0114: 1, L0586: 1 and H0423: 1.	
HSAXO53	727491	5622	2 - 130	15374	Ile-1 to Leu-11, Glu-31 to Thr-37.	H0186: 1 and S0114: 1.	
HSAXO65	713784	5623	45 - 248	15375		S0114: 2	
HSAXP51	725673	5624	194 - 319	15376	Thr-3 to Arg-12, Arg-29 to Glu-35.	S0114: 2 and H0581: 1.	
HSAXR08	959441	5625	192 - 521	15377	Leu-3 to Ser-9.	L0748: 2, S0114: 1, H0581:	

HSAXR83	866831	5626	33 - 362	15378	Gly-105 to Ala-110.	1 and L0367: 1.
HSAXS44	715896	5627	2 - 148	15379	Pro-16 to Lys-21.	S0114: 1 and H0305: 1.
HSAYA60	650857	5628	1 - 342	15380	Gly-30 to Phe-41.	S0114: 2
HSAYA80	751139	5629	145 - 522	15381	Gly-1 to Ala-6.	S0114: 2
HSAYA95	856883	5630	145 - 339	15382	Ala-1 to Gly-8.	S0114: 2
HSAYC17	663910	5631	170 - 376	15383	Ala-19 to Pro-36.	S0114: 1, H0254: 1, H0255: 1 and S0002: 1.
HSAYC39	705409	5632	147 - 374	15384	Glu-44 to Ser-55.	S0114: 1, L0309: 1 and H0445: 1.
HSAYC84	723425	5633	219 - 437	15385	Thr-63 to Lys-68.	S0114: 1 and H0436: 1.
HSAYG62	745692	5634	75 - 275	15386	Lys-2 to Arg-7.	S0114: 1, H0318: 1, L0803: 1, L0748: 1 and L0754: 1.
HSAYH09	971427	5635	3 - 206	15387	Gln-13 to Trp-24.	S0114: 2
HSAYH38	731434	5636	451 - 687	15388	Ser-37 to Thr-44.	S0114: 4, H0556: 1 and H0187: 1.
HSAYK03	881282	5637	3 - 443	15389	Arg-22 to Gly-28.	S0114: 1, H0305: 1 and H0589: 1.
HSAYK26	681730	5638	175 - 357	15390	Pro-41 to Pro-48.	S0114: 1 and H0305: 1.
HSAYK79	699056	5639	153 - 266	15391	Gly-56 to Ser-67.	S0114: 2
HSAYL46	720352	5640	266 - 448	15392	Ala-20 to Gly-36.	S0114: 1 and H0444: 1.
HSAYL64	765847	5641	2 - 136	15393	His-1 to His-6.	S0114: 2 and L0749: 1.
HSAYL72	951025	5642	70 - 237	15394	Thr-26 to Ser-31.	S0114: 2 and H0591: 1.
HSAYL93	920778	5643	49 - 291	15395	Pro-92 to Val-97.	S0114: 1 and S0134: 1.
HSAYM75	719241	5644	3 - 116	15396	Gly-114 to Gly-122.	S0114: 1 and H0264: 1.
HSAYM91	959486	5645	86 - 232	15397	Ser-24 to His-34.	S0114: 1 and H0318: 1.
HSAYN79	471037	5646	276 - 434	15398	Ser-1 to Asp-30.	S0114: 2

HSAY071	745703	5647	156 - 329	15399	Pro-21 to Glu-31.	S0114: 2	
HSAYR35	675897	5648	75 - 191	15400		S0114: 2	
HSAYS26	681725	5649	3 - 170	15401		S0114: 2 and L0794: 1.	
HSAYS54	730688	5650	242 - 433	15402	Ser-8 to Val-13.	S0114: 1, L0772: 1, L0766: 1 and H0423: 1.	
HSAYW12	856909	5651	87 - 257	15403	Ser-34 to Met-46.	S0114: 1, H0255: 1 and H0423: 1.	
HSAYW75	866818	5652	1 - 189	15404	Gly-1 to Ser-6, Ala-32 to Asp-44, Glu-46 to Leu-51.	S0114: 1 and H0576: 1.	
HSAZC11	964994	5653	27 - 206	15405		S0114: 2	
HSAZC18	666442	5654	92 - 220	15406		S0114: 2	
HSAZC33	702423	5655	166 - 270	15407		S0114: 3	
HSAZC41	712326	5656	148 - 285	15408	Pro-28 to Val-34.	S0114: 2	
HSAZC69	757577	5657	85 - 231	15409		S0114: 2	
HSAZC70	866814	5658	2 - 238	15410		S0114: 3 and H0402: 1.	
HSAZC72	509611	5659	196 - 366	15411	Thr-1 to Ala-6.	S0114: 3	
HSAZC91	790196	5660	122 - 286	15412		S0114: 2	
HSAZD30	692708	5661	161 - 313	15413		S0114: 2	
HSAZB47	887420	5662	77 - 517	15414	His-10 to Ile-16, Arg-27 to Ser-34, Arg-44 to Asn-49, Tyr-77 to Cys-89.	AR050: 2, AR054: 1, AR051: 1, S0114: 2	
HSAZB66	725704	5663	2 - 247	15415	Leu-75 to Leu-81.	S0114: 1 and S0052: 1.	
HSAZP25	787070	5664	3 - 257	15416		S0114: 2	
HSAZF47	719615	5665	306 - 425	15417		S0114: 1 and H0445: 1.	
HSAZG04	927161	5666	1 - 180	15418	Glu-1 to His-6, Ser-35 to Ala-41, His-52 to Cys-59.	S0114: 2	
HSAZG53	727729	5667	24 - 131	15419		S0114: 1 and H0318: 1.	
HSAZH64	730784	5668	165 - 347	15420	Arg-1 to Glu-8.	S0114: 1 and H0402: 1.	
HSAZI04	927167	5669	27 - 191	15421		S0114: 1 and H0521: 1.	
HSAZK83	781717	5670	1 - 117	15422		S0114: 2	
HSAZN07	847802	5671	138 - 370	15423		S0114: 1 and H0421: 1.	
HSAZP34	796044	5672	214 - 357	15424	Gly-20 to Glu-31.	S0114: 2	
HSAZQ04	927174	5673	2 - 187	15425	Phe-42 to Glu-49.	H0589: 2 and S0114: 1.	

HSMB404	927420	5674	43 - 180	15426	Asp-1 to Glu-7, Arg-25 to Ile-32, Glu-37 to Gly-46.	S0298: 1 and S0052: 1.	
HSMB453	727597	5675	130 - 195	15427		S0298: 2	
HSMBB53	964887	5676	2 - 100	15428		S0298: 1 and H0402: 1.	
HSMBD29	690390	5677	412 - 215	15429		S0298: 1, H0581: 1 and H0542: 1.	
HSQFR23	676362	5678	94 - 291	15430	Asn-28 to Ser-35, Arg-58 to Pro-66.	H0641: 2, S0002: 2, L0766; 2, L0438: 2, L0439: 2, H0657: 1, H0638: 1, H0637; 1, L0763: 1, L0768: 1, L0794: 1, L0655: 1, H0521: 1, H0522: 1, L0779: 1, L0777: 1 and S0026: 1.	
HSYAD19	668590	5679	52 - 132	15431		H0551: 2	8q11
HSYBC05	920174	5680	215 - 385	15432	Asp-11 to His-16, Asn-41 to Ser-47.	H0341: 1, H0402: 1, S0003: 1, H0551: 1 and L0766: 1.	
HSYBF51	883699	5681	2 - 334	15433	Leu-12 to Gly-31.	H0551: 2	
HSYBL15	660053	5682	2 - 286	15434	Pro-26 to Gly-32.	AR061: 1, AR089: 0 S0212: 1, H0551: 1 and L0366: 1.	6q23
HSYBL77	727842	5683	142 - 327	15435	Ser-7 to Asp-12, Arg-30 to Ser-41.	H0341: 1 and H0551: 1.	
HSYCX75	870939	5684	60 - 191	15436	Ser-79 to Gly-86, Pro-93 to Asp-99.	H0551: 2	
HSYDF85	783730	5685	1 - 399	15437		H0069: 1 and H0551: 1.	
HSYDF04	970789	5686	23 - 403	15438	His-3 to Ala-10, Gly-22 to Glu-29, Pro-53 to Pro-59, Leu-106 to Glu-111, Glu-119 to Asn-125.	H0457: 4, H0522: 2 and H0551: 1.	
HT1SC71	792728	5687	96 - 326	15439		H0218: 3	



HT2AB63	518444	5688	66 - 263	15440	Gln-59 to Lys-66.	H0139: 2	
HT2SA18	522773	5689	201 - 443	15441	Ser-34 to Ala-40, Asn-61 to Ala-70.	H0220: 2, L0748: 1 and L0749: 1.	
HT2SF05	932853	5690	231 - 467	15442		H0220: 1 and S0053: 1.	
HT2SF45	522759	5691	120 - 320	15443		H0220: 2	
HT2SG56	870913	5692	87 - 320	15444		H0556: 1 and H0220: 1.	
HT2SG66	522753	5693	171 - 305	15445	Lys-12 to Ile-25.	H0220: 2	
HT3AG28	973645	5694	57 - 209	15446	Tyr-1 to Gln-19.	H0140: 3	
HT3AH13	527913	5695	17 - 175	15447	Arg-2 to His-13.	H0140: 2 and L0369: 1.	
HT3BA84	509190	5696	266 - 412	15448		H0159: 2, H0222: 1 and H0422: 1.	
HT3BB93	530750	5697	165 - 266	15449		H0222: 1 and H0159: 1.	
HT3BC30	691009	5698	88 - 201	15450	Arg-14 to Lys-30.	H0223: 1 and H0159: 1.	
HT3BF34	534887	5699	67 - 189	15451		H0222: 1, H0159: 1, H0179: 1 and S0053: 1.	
HT3BG05	932557	5700	3 - 365	15452	Leu-18 to Gln-25.	H0222: 1 and H0159: 1.	
HT3BG34	527779	5701	80 - 166	15453		H0159: 2	
HT3SA07	954360	5702	19 - 210	15454	Val-3 to Leu-9, Lys-14 to Thr-19, Trp-27 to Ser-32.	H0222: 1 and H0264: 1.	
HT3SB56	958400	5703	601 - 912	15455	Phe-27 to Arg-34.	H0222: 1 and H0159: 1.	16p13.13-p13.12 186580, 278760, 601313
HT3SF46	522600	5704	181 - 312	15456		H0222: 1 and H0159: 1.	
HT3SF93	791423	5705	207 - 527	15457	Gly-7 to Met-20, Pro-28 to Leu-33, Met-52 to Cys-58, Arg-92 to Ser-97.	H0222: 1, S0428: 1 and L0601: 1.	
HT3SG30	522532	5706	127 - 258	15458		H0222: 3, H0576: 1 and L0779: 1.	
HT4CF32	887174	5707	133 - 846	15459	Gly-1 to Val-16, Thr-114 to Arg-119.	AR050: 48, AR054: 34, AR051: 20 H0141: 5, H0585: 5, L0805: 2, H0638: 1, H0606: 1, L0369: 1, L0761: 1, L0800: 1, L0771: 1, L0768: 1, L0766: 1 and L0806: 1.	

HT4CL83	974117	5708	178 - 489	15460	Val-18 to Thr-23, Val-42 to Trp-49, Glu-63 to Tyr-70.	H0585: 6 and H0141: 2.	
HT4CM20	805558	5709	195 - 449	15461		H0585: 8 and H0141: 3.	
HT4FN75	686279	5710	2 - 127	15462		H0585: 2	
HT4FS23	952837	5711	2 - 178	15463		H0585: 2	
HT4FV06	935056	5712	1 - 87	15464	Leu-2 to Pro-8.	H0585: 1 and H0576: 1.	
HT4GF30	870887	5713	6 - 245	15465	Thr-14 to Arg-23, Gly-37 to Phe-50.	H0585: 17, H0141: 7, L0804: 4, H0641: 2, L0769: 2, L0800: 2, L0803: 2, L0809: 2, L0731: 2, L0763: 1, L0761: 1, L0773: 1, L0789: 1, L0747: 1, L0777: 1 and H0422: 1.	
HT4GJ85	909971	5714	38 - 526	15466	Gly-115 to Arg-120.	H0585: 9	
HT4SB45	522502	5715	118 - 399	15467		H0224: 3	
HT4SE86	531561	5716	50 - 235	15468		H0224: 1, H0160: 1 and H0225: 1.	
HT4TB12	870955	5717	2 - 277	15469		H0225: 2, H0224: 1 and H0160: 1.	
HT5AD70	960050	5718	3 - 167	15470		H0167: 4	
HT5AH76	921539	5719	2 - 133	15471		H0167: 3	
HT5AD96	728624	5720	2 - 88	15472		H0167: 2	
HT5EA69	952359	5721	12 - 488	15473	Arg-9 to Trp-20, Met-27 to Gly-33, Gln-52 to Ile-57, Gln-60 to Glu-69.	H0584: 10	
HT5EU04	531205	5722	268 - 435	15474	Phe-1 to Glu-11, Gly-17 to Arg-41.	H0584: 9, H0167: 2, H0271: 1 and H0416: 1.	
HT5EU59	739092	5723	1 - 354	15475	Arg-3 to Ala-10, Pro-21 to Thr-36, Gly-38 to Gly-51, Arg-58 to Gly-64, Ala-32 to Glu-38, Gln-74 to Gly-85.	H0584: 2	
HT5FD31	697721	5724	3 - 335	15476		H0584: 4	
HT5AA68	733636	5725	131 - 244	15477	Gln-23 to Asn-29.	H0069: 2	

HTAA474	960479	5726	1 - 315	15478	Glu-12 to Thr-22, Arg-28 to Ala-33, Leu-43 to Thr-50.	H0069: 2 and L0592: 1.	
HTAAC05	932913	5727	90 - 329	15479	Gly-1 to His-6.	H0069: 5	
HTAAG63	578537	5728	24 - 182	15480		H0402: 2, L0529: 2 and H0069: 1.	
HTAAP36	629270	5729	25 - 135	15481	Glu-13 to Glu-20.	H0069: 2	22
HTAAP96	518454	5730	24 - 152	15482	Cys-16 to Arg-25, Arg-33 to Leu-41.	H0069: 3 and H0635: 1.	
HTAAQ82	952304	5731	236 - 415	15483		H0069: 3 and H0556: 1.	
HTAAU76	808527	5732	2 - 274	15484	Arg-10 to Arg-17.	H0069: 3	
HTAAU78	870884	5733	76 - 129	15485		H0069: 3	
HTAAW11	961231	5734	57 - 248	15486		H0069: 5	
HTAAW46	719422	5735	3 - 122	15487	Met-1 to Thr-6, Pro-21 to Ser-27.	H0069: 2	
HTAAW81	535295	5736	2 - 166	15488	Gln-11 to Ser-16.	H0069: 5	
HTAAV89	575304	5737	39 - 146	15489		H0069: 3	
HTABE51	960936	5738	103 - 288	15490	Glu-2 to Lys-26.	H0069: 2	
HTABE93	509675	5739	95 - 259	15491		H0069: 3	
HTABF52	535399	5740	113 - 316	15492	Lys-22 to Pro-28.	H0069: 4	
HTABF72	508952	5741	126 - 329	15493	Arg-13 to Arg-18.	H0069: 2	
HTABG03	960931	5742	2 - 220	15494	Arg-1 to Gln-7.	H0069: 9	
HTABG44	508366	5743	142 - 14	15495	Ala-1 to Arg-9.	H0069: 2	
HTABG83	518355	5744	124 - 177	15496		H0069: 2 and H0318: 1.	
HTABG87	940153	5745	75 - 344	15497	Ser-9 to Ser-14, Lys-24 to Ser-30, Cys-34 to Ile-39, Lys-46 to Leu-60.	H0069: 1 and H0581: 1.	
HTAB93	508441	5746	3 - 263	15498		H0069: 3	
HTABK73	835945	5747	3 - 251	15499	Pro-60 to Lys-68.	H0069: 1, S0144: 1 and S0142: 1.	
HTABN17	954400	5748	3 - 89	15500	Gln-16 to Ile-21.	H0069: 8	
HTACU04	925571	5749	96 - 263	15501	Pro-7 to Thr-27.	H0069: 1 and H0635: 1.	
HTACN31	974314	5750	280 - 408	15502		H0069: 1 and H0635: 1.	
HTACN96	975073	5751	394 - 582	15503		H0069: 3 and H0635: 2.	

HTACP19	537439	5732	3 - 101	15504	Thr-1 to Met-32.	H0069: 2 and H0543: 1.	12q24.3-qter
HTACP52	968997	5753	200 - 433	15505	Glu-67 to Arg-72.	L0766: 2, H0069: 1 and H0625: 1.	
HTACK92	918250	5754	2 - 271	15506	Gly-10 to Gly-15, Tyr-22 to Lys-31, Glu-70 to Phe-76.	H0069: 1 and H0635: 1.	
HTACS45	537433	5755	57 - 122	15507	Pro-15 to Gly-22.	H0069: 2	
HTACS46	537435	5756	2 - 181	15508		H0069: 2	
HTACT29	537377	5757	119 - 271	15509		S0052: 2 and H0069: 1.	
HTACU21	504612	5758	63 - 143	15510		H0069: 2	
HTACU80	777608	5759	31 - 207	15511		H0069: 1 and S0428: 1.	
	870869	9596	161 - 316	19348	Cys-32 to Asp-38.		
HTACW17	961560	5760	3 - 287	15512	Arg-22 to Thr-28, Pro-41 to Glu-48.	H0069: 1 and H0063: 1.	
HTACY32	531492	5761	290 - 445	15513	Cys-14 to Glu-30.	H0069: 1 and H0764: 1.	
HTACY49	557836	5762	62 - 199	15514	Leu-23 to Ser-29.	H0069: 2	
HTADA22	507146	5763	1 - 297	15515		H0069: 2	
HTADC11	967577	5764	3 - 170	15516	Gln-1 to Pro-6, Ser-15 to Glu-30, Ile-37 to Tyr-42.	H0069: 1, H0635: 1 and L0780: 1.	
HTADH05	932470	5765	44 - 130	15517	Arg-1 to Glu-7.	H0069: 2	
HTADH61	955245	5766	52 - 189	15518		H0069: 2	
HTADH11	964944	5767	2 - 238	15519	Pro-7 to Lys-12, Pro-27 to Gly-39.	H0069: 2	
HTADI93	870820	5768	2 - 172	15520	Ser-45 to Ser-54.	H0069: 1 and H0635: 1.	
HTADJ23	537427	5769	58 - 264	15521	Thr-56 to Thr-63.	H0069: 2	
HTADJ36	773764	5770	29 - 391	15522	Ser-9 to Ala-16, Lys-19 to Glu-31, Pro-63 to Trp-68, Pro-90 to Gly-98.	H0069: 2	
HTADK40	537423	5771	306 - 461	15523		H0069: 2	
HTADM61	550342	5772	190 - 432	15524	Phe-8 to Cys-15.	H0069: 2 and H0556: 1.	
HTADQ83	734996	5773	56 - 241	15525	Ser-40 to Phe-45.	H0069: 1 and S0142: 1.	
HTADQ93	537418	5774	1 - 69	15526	Pro-51 to Arg-58.	H0069: 2	

HTADR41	934435	5775	73 - 225	15527		H0069: 2	
HTADW69	537428	5776	3 - 101	15528		H0069: 2	
HTADW78	761591	5777	188 - 319	15529		H0069: 2	
HTAEF32	927101	5778	217 - 372	15530	Glu-1 to Ile-6.	H0069: 2	
HTAEH74	974303	5779	234 - 377	15531		H0635: 2 and H0069: 1.	
HTAEJ77	930978	5780	3 - 428	15532	His-1 to Arg-20.	H0069: 2 and H0635: 1.	
HTAEK78	773763	5781	303 - 494	15533	Glu-1 to Pro-7.	H0069: 2	
HTAEL90	958220	5782	1 - 147	15534		H0069: 1, H0457: 1 and S0426: 1.	
HTAE084	537374	5783	3 - 104	15535		H0069: 2	
HTAER18	537421	5784	71 - 205	15536		H0069: 2	
HTAES82	537373	5785	126 - 254	15537	Asp-10 to Asp-16, Gln-29 to Ala-35.	H0069: 3	
HTAET86	969532	5786	2 - 298	15538		H0069: 1 and H0635: 1.	
HTAEU76	767963	5787	311 - 568	15539	Ser-1 to Glu-10, Ser-53 to Phe-59.	H0069: 1 and H0264: 1.	
HTAEV65	838803	5788	169 - 402	15540		H0069: 1, H0635: 1 and L0523: 1.	
HTAEW87	971526	5789	243 - 329	15541	Ile-1 to Gln-7.	H0069: 4	
HTAEW95	780986	5790	28 - 462	15542		H0384: 2, H0265: 1 and H0069: 1.	
HTAEX66	881092	5791	209 - 487	15543	Arg-65 to Asp-70.	H0069: 5	
HTAFA06	934570	5792	107 - 322	15544	Ala-29 to Tyr-45, Gly-53 to Ala-60.	H0069: 2	
HTAFA66	868433	5793	167 - 454	15545	Pro-38 to Trp-51, Asp-53 to Gly-59, Thr-70 to Trp-78.	H0069: 1 and H0581: 1.	
HTAFC37	973085	5794	359 - 93	15546	Gln-1 to Gly-7, Pro-16 to Asp-28, Arg-66 to Asp-73.	H0069: 2, L0794: 1, L0803: 1 and L0758: 1.	
HTAFC76	767976	5795	46 - 303	15547		H0069: 2	
HTAFD63	744409	5796	68 - 21	15548	Asp-68 to Gly-80.	H0069: 2	
HTAFEF69	944409	5797	25 - 366	15549	Lys-14 to Glu-32.	AR061: 7, AR089: 5 H0069: 3, L0794: 1, L0803: 1 and L0758: 1.	

HTAFB90	787604	5798	134 - 232	15550				H0069: 1 and H0090: 1.
HTAFF11	933028	5799	99 - 338	15551		Trp-36 to Tyr-58, Ser-74 to Asp-80.		H0069: 2
HTAFF76	767968	5800	226 - 393	15552				H0069: 2
HTAFG52	974338	5801	23 - 283	15553				H0069: 1, H0635: 1 and S0216: 1.
HTAFG58	870854	5802	3 - 239	15554		Gln-2 to Leu-10.		H0069: 1 and H0635: 1.
HTAGA71	870853	5803	137 - 304	15555				H0069: 1 and H0635: 1.
HTAGB89	974060	5804	258 - 371	15556				H0635: 2 and H0069: 1.
HTAGC91	963125	5805	164 - 397	15557		Gln-17 to Gly-23.		H0635: 4
HTAGI29	925699	5806	155 - 334	15558				H0556: 1, H0635: 1 and S0474: 1.
HTAGI53	936117	5807	1 - 198	15559		Gly-7 to Gly-16.		H0271: 2, H0255: 1 and H0635: 1.
HTAGL61	963182	5808	1 - 363	15560		Ala-1 to Gln-11, Lys-30 to Lys-40, Arg-52 to His-73, Asp-109 to Leu-114.		H0635: 3
HTAGN04	926501	5809	294 - 473	15561		Lys-46 to Arg-52.		H0635: 2 and L0748: 1.
HTAGV46	847777	5810	2 - 238	15562		Asp-54 to Ser-63, Ser-65 to Gln-79.		H0635: 2 and S0116: 1.
HTAGV49	836078	5811	130 - 435	15563		Lys-13 to Leu-20, Ser-39 to Arg-46.		H0635: 2 and L0766: 1.
HTAGZ11	965867	5812	104 - 280	15564		Cys-37 to His-45.		S0114: 1 and H0635: 1.
HTAIB17	860919	5813	2 - 292	15565		Pro-7 to Gly-15, Pro-37 to Gly-42.		H0635: 1 and H0271: 1.
HTAII49	934013	5814	243 - 494	15566		Asn-52 to Gln-59.		H0635: 2 and H0069: 1.
HTAIK12	920332	5815	249 - 458	15567				H0635: 1 and H0422: 1.
HTAHL28	974030	5816	3 - 359	15568		Val-2 to Pro-7, Ala-17 to Gly-24, Arg-26 to Leu-32, Cys-36 to Arg-49, Arg-56 to Gly-67, Asn-69 to Trp-76, Gly-79 to Pro-89, Tyr-108 to Ile-113.		H0635: 3

HTAHL45	908949	5817	139 - 663	15569	Leu-14 to Lys-20, Glu-28 to Ala-67, Pro-81 to Gln-88, Leu-128 to Lys-137.	AR061: 314, AR089: 160 H0635: 2 and L0439: 2.	
HTAHL76	974300	5818	2 - 202	15570			
HTAHN29	923115	5819	317 - 580	15571	Gly-1 to Cys-17, His-59 to Pro-69, Arg-82 to Ile-88.	H0635: 2 and H0556: 1. H0556: 1, H0635: 1 and H0543: 1.	
HTAHQ22	870831	5820	5 - 289	15572	Leu-8 to Ser-16, Ser-25 to Glu-32, Gly-71 to Lys-79.	H0635: 2	
HTAHQ94	839505	5821	248 - 520	15573		H0635: 2	
HTAHR03	922772	5822	267 - 380	15574	Ser-7 to Gln-18, Pro-44 to Asp-51.	H0069: 1 and H0635: 1. H0457: 2, H0635: 1 and H0445: 1.	
HTAHR06	934062	5823	203 - 358	15575	Asn-6 to His-12.	H0635: 3	
HTAHS10	963183	5824	9 - 218	15576	Cys-12 to Pro-17, Arg-45 to Cys-54, Glu-58 to Ile-67.	H0069: 1 and H0635: 1.	
HTAHS21	960795	5825	3 - 380	15577	Val-100 to Gln-105.		
HTAHV04	926747	5826	3 - 449	15578		H0635: 2, L0746: 2, L0770: 1, L0769: 1, L0659: 1 and L0745: 1.	
HTAIB11	965835	5827	2 - 118	15579		H0635: 2	
HTAIC05	930951	5828	622 - 819	15580	Asn-10 to Ser-16.	L0749: 5, H0635: 1, S0426: 1 and L0748: 1.	
HTAID04	926541	5829	200 - 403	15581	Gln-32 to Ser-38.	H0069: 2 and H0635: 1.	
HTAIF70	974062	5830	2 - 214	15582		H0069: 2, H0635: 1 and H0179: 1.	
HTAIF78	870785	5831	22 - 363	15583	Leu-1 to Gly-8, Ser-74 to Gly-84, Pro-97 to Gly-108.	H0556: 3, H0069: 1, H0635: 1, H0318: 1, S0344: 1 and L0766: 1.	
HTAIK75	870815	5832	282 - 470	15584	Pro-8 to Val-15.	H0635: 1 and H0542: 1.	
HTAIQ39	921729	5833	19 - 249	15585	Arg-9 to Gly-15.	H0069: 1 and H0635: 1.	
HTAIQ75	870804	5834	3 - 281	15586	Ser-57 to Gln-68.	H0635: 2	

HTAIR54	870814	5835	106 - 327	15587	Thr-33 to Phe-38.	L0600: 2, H0635: 1 and H0264: 1.	9q11-q22	229600, 264300, 600542, 602014, 602088
HTAIU80	968234	5836	23 - 205	15588	Ser-30 to Asp-36.	H0635: 1 and H0271: 1.		
HTAIV79	870874	5837	63 - 368	15589	Pro-4 to Leu-14, Ser-43 to Pro-49.	H0069: 1 and H0635: 1.		
HTAIG31	926731	5838	282 - 452	15590	His-18 to Cys-24.	H0635: 2		
HTAIG65	975260	5839	152 - 355	15591	His-39 to Leu-66.	H0635: 3 and H0069: 1.		
HTAIJ01	914899	5840	160 - 2	15592		H0635: 2		
HTAJN08	938057	5841	2 - 160	15593		H0635: 2		
HTAIR80	975309	5842	183 - 380	15594		H0635: 3		
HTBAA95	715044	5843	2 - 478	15595	His-1 to Glu-14, Thr-22 to Ser-28, Pro-36 to Val-44, Glu-80 to Asp-91.	H0075: 1 and H0521: 1.		
HTDAA07	870742	5844	3 - 209	15596	Asp-1 to Gly-9.	H0486: 1 and H0477: 1.		
HTDAC37	575842	5845	3 - 227	15597	Ser-62 to Glu-75.	H0477: 2 and L0041: 1.		
HTDAE77	772242	5846	51 - 233	15598		H0556: 1 and H0477: 1.		
HTDAE25	714359	5847	506 - 694	15599	Leu-19 to His-29.	H0635: 1 and H0477: 1.		
HTDAE43	889311	5848	2 - 169	15600	Pro-27 to Gly-34.	H0457: 1 and H0477: 1.		
HTDAF65	971582	9597	390 - 638	19349	Gly-4 to Tyr-10.	H0581: 2, H0477: 1, H0272: 1 and L0766: 1.		
HTDAG18	975317	5850	236 - 520	15602	Val-7 to Gly-19, Thr-51 to Thr-56, Ser-62 to Gly-72.	H0069: 2, H0635: 1 and H0477: 1.		
HTDAI42	576013	5851	46 - 180	15603	Asn-35 to Ser-40.	H0477: 1 and H0422: 1.		
HTGAL23	574100	5852	96 - 308	15604		S0134: 2 and L0594: 1.		
HTGAM06	935798	5853	2 - 298	15605	Ile-12 to Thr-17.	S0134: 2		
HTGAM26	682040	5854	2 - 175	15606	Ile-1 to Phe-13, Leu-16 to Arg-33, Ser-45 to Ser-50.	S0134: 1 and H0341: 1.		
HTGAM42	578797	5855	31 - 126	15607		S0134: 2		
HTGAN20	578804	5856	1 - 327	15608	Gly-1 to Pro-13, Lys-20 to Val-33, Pro-74 to Glu-84.	S0134: 2		



HTGAO17	876650	5857	3 - 569	15609	Arg-41 to Asn-46, Pro-96 to Lys-102, Ala-122 to Glu-127.	S0134: 1, T0042: 1 and H0543: 1.	
HTGAR40	664270	5858	67 - 216	15610	Glu-17 to Ile-29.	S0134: 2	
HTGAR72	574681	5859	1 - 291	15611	Gly-1 to Cys-8, Glu-11 to Gly-19.	S0134: 1 and H0271: 1.	
HTGAS32	835534	5860	258 - 458	15612	Gly-13 to Glu-20, Gly-24 to Cys-30.	S0134: 1, L0623: 1, H0087: 1, H0445: 1 and L0599: 1.	
HTGAT93	791508	5861	1 - 153	15613	Pro-11 to Thr-19.	S0134: 3	
HTGAV59	870798	5862	241 - 420	15614	Thr-1 to Ser-8, Gly-13 to Lys-19.	S0134: 1 and H0318: 1.	
HTGAW37	752829	5863	2 - 172	15615	Ser-35 to Thr-42.	S0134: 1 and H0179: 1.	
HTGAW75	572404	5864	201 - 422	15616		S0134: 1, H0581: 1 and H0576: 1.	
HTGAX19	782877	5865	46 - 294	15617		S0134: 1 and H0576: 1.	
HTGAY36	923716	5866	122 - 319	15618		S0134: 1 and H0576: 1.	
HTGAY79	775299	5867	2 - 208	15619		S0134: 1 and H0522: 1.	
HTGAZ62	870414	5868	345 - 157	15620		S0134: 2	
HTGAZ79	584717	5869	13 - 183	15621		S0134: 1, T0041: 1 and L0748: 1.	
HTGBE53	685648	5870	24 - 332	15622	Ala-22 to Phe-28.	S0114: 1 and S0134: 1.	
HTGBE76	954599	5871	287 - 613	15623	Val-95 to Arg-101.	H0341: 2, S0134: 1, L0759: 1 and H0543: 1.	
HTGBF16	572499	5872	184 - 420	15624	Ser-33 to Leu-45.	L0748: 3, S0134: 1 and H0271: 1.	
HTGBF62	753962	5873	53 - 298	15625		S0134: 1 and S0002: 1.	
HTGBF90	786611	5874	2 - 217	15626		S0134: 1, H0581: 1 and H0543: 1.	
HTGBG55	966903	5875	3 - 164	15627	Pro-18 to Ala-33.	S0134: 1, L0779: 1 and H0543: 1.	
HTGBH18	579103	5876	102 - 260	15628	Glu-9 to Cys-15, His-45 to Arg-53.	S0134: 1 and S0116: 1.	
HTGBH55	735751	5877	83 - 595	15629		S0278: 2 and S0134: 1.	
HTGBI93	787110	5878	3 - 221	15630	Arg-37 to Leu-42.	S0134: 1 and H0305: 1.	
HTGBJ55	579005	5879	181 - 357	15631		S0134: 1 and H0354: 1.	300031, 300044, 300048, 300049.

HTGBK66	772325	5880	78 - 341	15632	Pro-8 to Trp-15.	S0134: 2	300049, 300055, 300100, 300100, 300104, 300126, 301201, 301590, 302060, 302060, 302060, 302060, 302960, 303700, 303800, 303900, 304800, 305900, 305900, 305900, 306700, 306995, 308310, 308840, 308840, 308840, 309200, 309548, 309620, 309900, 310300, 310400, 310460, 310460, 311300, 311510, 314300, 314400
HTGBL34	572643	5881	66 - 281	15633	Ala-29 to Arg-41.	S0134: 1 and H0090: 1.	
HTGBL72	576641	5882	35 - 238	15634	Asn-32 to His-39.	S0134: 1 and H0423: 1.	
HTGBN09	506500	5883	3 - 215	15635	Asn-32 to His-39.	S0134: 2	
HTGBN27	683557	5884	222 - 145	15636		S0134: 2 and S0002: 1.	
HTGBN57	578806	5885	1 - 270	15637		S0134: 2	
HTGBP65	870406	5886	54 - 239	15638	Glu-28 to Ser-33.	S0134: 2	
HTGBR20	669797	5887	144 - 311	15639	Lys-32 to Gln-37.	S0134: 1 and S0344: 1.	
HTGBR93	973978	5888	3 - 272	15640		S0134: 3	
HTGBS02	920445	5889	91 - 234	15641		S0134: 2	
HTGBY51	506502	5890	22 - 228	15642	Gln-54 to Glu-60.	S0134: 2	
HTGCD10	964884	5891	82 - 288	15643	Leu-27 to Ser-33, Glu-46 to Ala-53.	S0134: 1 and S0218: 1.	
HTGCD85	579028	5892	121 - 327	15644		S0134: 2	
HTGCT49	723090	5893	122 - 559	15645	His-1 to Gly-19, Ala-26 to Gly-31, Pro-48 to Ser-57.	S0134: 1 and H0444: 1.	

HTGCG89	894005	5894	3 - 155	15646	Ala-83 to Asn-117.	
HTGCH58	909849	5895	408 - 1103	15647	Asn-1 to Val-6.	S0134: 1 and H0576: 1.
					Arg-25 to Gln-32, Ser-73 to Lys-85, Asp-138 to Gln-145, Gln-164 to Asp-174, Leu-185 to Lys-194.	AR089: 2, AR061: 1 L0766: 2, L0776: 2, L0740: 2, S0134: 1, H0633: 1, L0370: 1, S0142: 1, L0792: 1, H0521: 1, H0522: 1, L0779: 1 and L0366: 1.
HTGCI80	588166	5896	79 - 243	15648		S0134: 1, L0471: 1, L0753: 1 and H0543: 1.
HTGCI54	571389	5897	88 - 276	15649	Thr-1 to Thr-6.	S0134: 2 and S0114: 1.
HTGCL06	935789	5898	204 - 338	15650		S0134: 1 and H0580: 1.
HTGCL40	578774	5899	100 - 219	15651		S0134: 2
HTGCL94	747573	5900	1 - 183	15652		AR054: 10, AR050: 7, AR051: 3
						S0134: 2
HTGCM13	913673	5901	1 - 132	15653		S0134: 2
HTGCM90	678122	5902	80 - 358	15654	Glu-71 to Val-77.	S0114: 1 and S0134: 1.
HTGCM92	578768	5903	1 - 138	15655	Ser-13 to Arg-23.	S0134: 2
HTGCP76	770143	5904	10 - 144	15656	Gln-1 to Trp-25.	S0134: 1 and H0421: 1.
HTGCCQ15	880293	5905	128 - 391	15657		S0134: 1, S0218: 1, S0002: 1 and L0748: 1.
HTGCCQ19	974433	5906	70 - 279	15658	Pro-41 to Cys-46.	S0134: 2 and H0543: 1.
HTGCS20	933260	5907	2 - 205	15659		S0134: 1 and H0486: 1.
HTGCS81	921650	5908	15 - 167	15660		S0134: 2
HTGCT54	960912	5909	55 - 204	15661	Asn-15 to Trp-34.	S0134: 1 and H0543: 1.
HTGCT57	496297	5910	49 - 213	15662		S0134: 1 and S0002: 1.
HTGCU25	679403	5911	124 - 279	15663	Arg-1 to Phe-7.	S0134: 1 and S0002: 1.
HTGCU28	713353	5912	43 - 165	15664	Gly-1 to Lys-15.	S0134: 1 and S0218: 1.
HTGDG28	735002	5913	99 - 266	15665	Asn-20 to Gly-28.	S0134: 2 and S0114: 1.
HTGDG63	579127	5914	113 - 298	15666	Phe-11 to Gln-25, Lys-33 to Arg-51.	S0134: 2 and S0114: 1.
HTGDG70	757191	5915	75 - 230	15667	Gly-2 to Gln-7.	S0134: 2
HTGDG75	769010	5916	9 - 116	15668		S0134: 1 and H0444: 1.
HTGDM56	733405	5917	240 - 365	15669	Gly-12 to Val-29.	S0134: 1 and S0218: 1.

HTGDM65	967158	5918	2 - 355	15670	Gln-20 to Ala-26, Thr-58 to Lys-65, Gly-83 to Glu-89.	S0114: 2, S0134: 1 and H0255: 1.	
HTGDS63	958651	5919	161 - 373	15671	Pro-10 to Arg-15.	S0134: 1 and S0218: 1.	
HTGDS88	659766	5920	71 - 208	15672	Ile-20 to Thr-25.	S0134: 1 and S0218: 1.	
HTGDT91	974962	5921	306 - 638	15673	Pro-12 to Asn-20, Asp-43 to Arg-49.	AR089: 0, AR061: 0 S0134: 1 and H0069: 1.	
HTGDU57	712249	5922	270 - 536	15674	Gln-25 to Val-30.	S0134: 1 and H0090: 1.	
HTGDV50	708605	5923	336 - 464	15675		S0134: 2 and L0599: 1.	
HTGDW16	661477	5924	322 - 516	15676	Arg-1 to Lys-7.	S0134: 3, H0556: 1 and S0216: 1.	
HTGDW40	710759	5925	50 - 220	15677		AR089: 10, AR061: 8 S0134: 1, S0278: 1, S0144: 1, S0344: 1 and H0423: 1.	
HTGDW96	967030	5926	208 - 1356	15678	Arg-157 to Asn-172, Val-179 to Leu-185, Arg-206 to Ile-215, Ser-232 to Thr-241, Glu-374 to Pro-379.	S0134: 1 and S0426: 1.	
HTGDX29	883517	5927	169 - 462	15679	His-20 to Cys-27, Ala-40 to Ile-54.	L0776: 6, H0591: 2, S0218: 1, L0805: 1, H0521: 1 and H0543: 1.	
HTGEB95	725254	5928	137 - 397	15680	Glu-8 to Gln-13, Glu-43 to Ser-53.	S0218: 1 and H0306: 1. S0114: 1 and S0218: 1. S0218: 1 and H0306: 1.	
HTGED32	698776	5929	612 - 773	15681	Leu-13 to Pro-29.	S0134: 1 and S0218: 1. H0556: 1 and S0218: 1.	
HTGED54	729223	5930	1 - 462	15682		S0218: 2	
HTGED59	711417	5931	3 - 182	15683		S0218: 1 and H0521: 1. AR089: 0, AR061: 0 S0218: 1, H0264: 1 and S0053: 1.	
HTGED69	754761	5932	35 - 169	15684			
HTGEF77	771825	5933	337 - 498	15685	Leu-13 to Phe-20, Leu-28 to Gly-46.		
HTGEF78	769764	5934	1 - 147	15686			
HTGEF76	769765	5935	3 - 212	15687			
HTGEL46	685425	5936	323 - 457	15688			
HTGEL54	728905	5937	166 - 384	15689	Thr-41 to Asp-58.	S0218: 2	
HTGEL55	684871	5938	43 - 302	15690	His-25 to Ala-37.	S0114: 1 and S0218: 1.	
HTGEO46	674409	5939	268 - 417	15691	Pro-9 to Asp-21.	S0218: 1 and H0436: 1.	

HTGE086	703733	5940	57 - 272	15692	Arg-1 to Ser-11, Asp-21 to Leu-29.	S0218: 2	
HTGE094	723097	5941	422 - 622	15693		S0218: 1 and H0063: 1.	
HTGE090	799683	5942	13 - 276	15694	Ser-3 to Ser-10, Pro-37 to Thr-44, Phe-67 to Gln-74.	H0264: 2 and S0218: 1.	
HTGE092	789681	5943	44 - 352	15695		S0218: 1 and S0428: 1.	
HTGE091	967047	5944	3 - 311	15696	Arg-1 to Gly-8, Pro-26 to Gly-34.	AR089: 1, AR061: 1	
HTGE093	703443	5945	27 - 161	15697	Lys-16 to Asn-23.	S0218: 2	
HTGE040	711181	5946	1 - 69	15698		S0218: 2	
HTGE061	741828	5947	39 - 218	15699	Lys-28 to Asn-35.	S0218: 1, H0444: 1 and H0422: 1.	
HTGE068	753031	5948	178 - 330	15700	Val-23 to Pro-31.	S0218: 2	
HTGE072	683469	5949	96 - 215	15701		S0218: 1 and S0053: 1.	
HTGE046	719048	5950	1 - 270	15702	Gly-1 to Cys-6, Leu-18 to Lys-26, Gln-33 to Arg-43, Ile-63 to Ile-82.	S0218: 2 and H0580: 1.	
HTGE082	778928	5951	158 - 310	15703		S0218: 1 and H0521: 1.	
HTGE006	935470	5952	3 - 128	15704		S0114: 1 and S0218: 1.	
HTGE020	668924	5953	2 - 232	15705	Gln-8 to Asn-17, Asp-24 to Gln-30, Arg-41 to Cys-48, Ala-71 to Phe-77.	S0218: 1 and H0255: 1.	
HTGE070	757193	5954	206 - 364	15706		S0218: 2	
HTGE043	669222	5955	3 - 323	15707	Asp-5 to Thr-13.	S0218: 2 and L0758: 1.	
HTGE046	974106	5956	313 - 501	15708	Leu-1 to Cys-7.	S0218: 4	
HTGE051	866957	5957	2 - 166	15709	Ser-1 to Cys-8.	S0218: 2 and S0114: 1.	
HTGE075	767032	5958	53 - 280	15710	His-1 to Lys-6, Val-45 to Tyr-54.	H0265: 1 and S0218: 1.	
HTGE007	952555	5959	147 - 341	15711	Val-9 to Val-15, Trp-44 to Arg-54.	S0218: 2, L0369: 1 and L0376: 1.	
HTGE049	722626	5960	90 - 239	15712	Met-27 to Ser-33.	S0218: 2	
HTGE059	738974	5961	31 - 135	15713	Tyr-10 to Gly-17.	S0218: 2	
HTGE062	742908	5962	32 - 223	15714		S0218: 2	

HTGFR80	810302	5963	27 - 257	15715	Leu-70 to Ser-76.	S0134: 1 and S0218: 1.
HTGF29	690276	5964	1 - 249	15716	Gly-20 to Pro-27.	S0218: 1 and H0264: 1.
HTGF63	744678	5965	167 - 556	15717		L0747: 2, S0218: 1 and H0423: 1.
HTGFX16	656777	5966	3 - 329	15718	Pro-33 to Ala-46, Asn-54 to Val-69, Pro-73 to Ser-78, Glu-93 to Pro-101.	S0218: 1 and H0581: 1.
HTGFX82	779055	5967	75 - 278	15719	Asn-34 to Lys-40.	S0218: 2
HTGF203	923443	5968	3 - 275	15720		AR089: 1, AR061: 1 S0218: 1 and H0485: 1.
HTGF235	707730	5969	13 - 285	15721	Ser-60 to Leu-66.	S0218: 2
HTGF258	735683	5970	59 - 190	15722		H0265: 1 and S0218: 1.
HTGGL08	938583	5971	2 - 232	15723		S0218: 2
HTGGL11	966328	5972	3 - 138	15724		S0218: 2
HTGGL23	974590	5973	3 - 449	15725		S0218: 2
HTGGL32	698714	5974	114 - 266	15726	Asp-1 to Ser-7, Lys-23 to Ile-28.	S0218: 2
HTGGL43	714932	5975	36 - 218	15727	Leu-11 to Glu-16.	S0218: 2
HTGGL79	774657	5976	2 - 103	15728	Thr-1 to Asn-10.	S0218: 2
HTGGM20	669083	5977	7 - 129	15729	Arg-20 to Gly-26.	S0218: 1, S0212: 1, H0318: 1 and L0648: 1.
HTGGM13	869239	5978	2 - 235	15730	Pro-10 to Ala-16.	S0218: 2 and H0556: 1.
HTGGM92	927051	5979	3 - 197	15731		H0556: 1 and S0218: 1.
HTHAA47	503638	5980	59 - 313	15732		H0222: 1 and H0062: 1.
HTHBA07	954426	5981	27 - 203	15733		H0063: 2 and L0657: 1.
HTHBA18	502818	5982	3 - 128	15734		H0063: 2
HTHBA68	915256	5983	3 - 392	15735		H0556: 1 and H0063: 1.
HTHBC31	578568	5984	259 - 468	15736	Tyr-10 to Thr-16.	H0063: 1 and H0423: 1.
HTHBC37	502935	5985	101 - 256	15737	Thr-6 to Leu-11.	H0063: 2
HTHBC67	964562	5986	172 - 318	15738		H0220: 1, H0486: 1, H0063: 1 and H0625: 1.
HTHBC65	526716	5987	1 - 132	15739		H0063: 2
HTHBL65	921965	5988	1 - 366	15740	Glu-6 to Thr-17.	H0402: 1 and H0063: 1.

HTHBC09	531115	5989	3 - 140	15741	Trp-23 to Arg-38.	
HTHBC94	529671	5990	85 - 243	15742	Lys-11 to Glu-19.	S0114: 1 and H0063: 1.
HTHB075	557957	5991	2 - 133	15743	Pro-23 to Glu-35.	H0063: 1 and H0264: 1.
HTHBW69	757741	5992	85 - 246	15744		H0265: 1 and H0063: 1.
HTHBV64	712474	5993	320 - 493	15745	Ser-25 to Trp-30.	H0318: 1 and H0063: 1.
HTHCA17	572407	5994	107 - 298	15746	Lys-19 to Leu-24.	H0063: 2 and S0052: 2.
HTHCA75	712649	5995	208 - 477	15747		H0063: 1 and H0264: 1.
HTHCB68	660309	5996	3 - 359	15748	His-1 to Ser-7.	H0063: 1, H0272: 1 and L0749: 1.
HTHCB83	578858	5997	109 - 321	15749	Thr-33 to Gly-40.	H0063: 2
HTHCC54	578877	5998	131 - 340	15750	Cys-24 to Asn-33.	H0063: 2
HTHCD17	664274	5999	62 - 331	15751	Ala-53 to Ser-61.	H0063: 2
HTHCD91	973272	6000	407 - 535	15752	His-8 to Asp-13.	H0063: 2
HTHCG11	967275	6001	117 - 245	15753	Arg-21 to Cys-29.	H0063: 3
HTHCG86	578843	6002	1 - 165	15754	Asp-1 to Glu-6.	H0063: 1 and H0521: 1.
HTHCH22	630239	6003	293 - 547	15755	Tyr-29 to Ile-37.	H0063: 1 and H0543: 1.
HTHCJ42	578875	6004	82 - 291	15756	Gly-1 to Lys-12.	H0305: 1, H0589: 1, H0063: 1 and L0591: 1.
HTHCK38	579080	6005	3 - 275	15757	Arg-19 to Ser-27.	H0063: 2
HTHCK42	870355	6006	239 - 376	15758		H0063: 1 and H0264: 1.
HTHCK91	922873	6007	1 - 141	15759		H0063: 2
HTHCKM08	959719	6008	20 - 268	15760	Lys-19 to Asn-27.	H0063: 1 and S0426: 1.
HTHCKM19	842036	6009	199 - 375	15761	Gly-24 to Arg-29.	H0063: 2
HTHCKM39	578831	6010	147 - 350	15762	Asn-28 to Phe-43.	H0305: 3, H0581: 1 and H0063: 1.
HTHCKN38	578826	6011	183 - 371	15763	Pro-1 to Ser-9.	H0063: 2
HTHCO28	705888	6012	1 - 231	15764		S0114: 1 and H0063: 1.
HTHC092	578757	6013	1 - 84	15765		L0794: 3, L0766: 2, H0581: 1, H0063: 1, L0792: 1, L0438: 1, L0439: 1 and

HTHCQ31	926330	6014	391 - 624	15766	Leu-48 to Arg-60.	L0779: 1. H0063: 1, L0766: 1, L0748: 1 and H0543: 1.	
HTHCQ63	959994	6015	224 - 361	15767			
HTHCR16	578722	6016	3 - 296	15768	His-1 to Pro-14, Arg-19 to Val-25, Cys-29 to His-42, Pro-62 to Arg-68, Cys-83 to Glu-92.	S0116: 2 and H0063: 1. H0063: 2	
HTHCT64	856477	6017	44 - 286	15769	Glu-1 to Ala-11.	H0063: 1 and H0445: 1.	
HTHCU43	578849	6018	199 - 297	15770		H0063: 2	
HTHCU85	578851	6019	159 - 314	15771	Lys-35 to Gly-42.	H0063: 2	
HTHCV21	671098	6020	2 - 211	15772	Asn-43 to Ser-50.	S0134: 1, L0717: 1, H0063: 1 and L0749: 1.	104770, 107670, 110700, 145001, 146760, 146790, 159440, 159440, 159440, 186780, 191030, 191315, 600923, 601412, 601652, 601863, 602491
HTHCV22	419714	6021	2 - 205	15773	Gly-48 to Lys-55.	H0063: 2	
HTHCV59	937393	6022	45 - 374	15774	Leu-71 to Gly-78.	AR089: 17, AR061: 10 H0318: 1 and H0063: 1.	
HTHCW35	707732	6023	55 - 147	15775		H0580: 1 and H0063: 1.	
HTHCW45	578823	6024	3 - 152	15776	Ile-16 to His-22.	H0063: 2	
HTHCW83	578828	6025	73 - 252	15777	Leu-1 to Lys-8.	H0063: 2	
					Thr-20 to Asn-26.		
HTHCX84	578874	6026	29 - 280	15778		H0063: 2	
HTHCY12	971165	6027	222 - 515	15779	Pro-22 to Pro-32, Arg-40 to Lys-50, Ala-69 to Gly-74.	L0766: 3, H0063: 2, L0769: 1, L0779: 1 and L0759: 1.	
HTHCZ96	578876	6028	94 - 306	15780	Arg-1 to Thr-7.	H0063: 2	
HTHDD40	707065	6029	2 - 367	15781	Phe-27 to Ala-47.	H0063: 2	
HTHDF26	869483	6030	160 - 546	15782	Pro-52 to Leu-58.	H0063: 1, H0576: 1 and	



HTHDE44	791641	6031	286 - 363	15783			H0445: 1.
HTHDE91	967215	6032	164 - 307	15784			H0063: 1 and S0428: 1.
HTHDF38	870339	6033	1 - 186	15785	Asn-10 to Leu-15, Phe-35 to Leu-42, Ser-56 to Arg-62.		H0063: 1 and H0423: 1. H0637: 1, H0063: 1, L0598: 1, H0542: 1 and H0423: 1.
HTHDEH24	574675	6034	84 - 242	15786	Val-4 to His-15.		H0250: 1, H0271: 1 and H0063: 1.
HTHDEH34	490926	6035	78 - 1	15787	Lys-1 to Thr-9, Leu-17 to Arg-26.		H0063: 5
	973304	9599	332 - 457	19351			
HTHDI31	959718	6036	173 - 304	15788			H0063: 2
HTHDI43	870335	6037	1 - 243	15789	Ser-40 to Asp-46, Val-48 to Lys-63.		H0063: 2
HTHDM25	578878	6038	145 - 333	15790			H0063: 2 and L0519: 1.
HTHDM65	579199	6039	145 - 252	15791			H0063: 2
HTHDM69	578834	6040	213 - 383	15792	Asn-3 to Gly-11.		H0063: 2
HTHDP70	578882	6041	134 - 268	15793			H0063: 2
HTHDQ85	966858	6042	33 - 227	15794	Lys-37 to Gly-43, Phe-57 to Thr-65.		H0063: 1 and H0272: 1.
HTHDR09	579076	6043	2 - 220	15795	Arg-1 to Gly-16, Ala-28 to Ala-34, Ser-40 to Lys-53.		H0063: 2
HTHDR24	578848	6044	2 - 208	15796	Ala-1 to Lys-13, Leu-19 to Ile-24, Tyr-26 to Ile-31, Pro-40 to Lys-46.		H0063: 2
HTHDU80	764136	6045	400 - 558	15797	Leu-19 to Arg-31.		H0580: 1 and H0063: 1.
HTIAB35	491273	6046	519 - 313	15798			AR089: 14, AR061: 3 H0063: 2, H0487: 1 and H0445: 1.
	853995	9600	358 - 185	19352			
	880424	9601	239 - 457	19353			
HTIAB39	705432	6047	111 - 260	15799			L0539: 1, H0580: 1 and H0487: 1.
HTIAD26	681865	6048	112 - 348	15800	Thr-59 to His-67.		H0487: 1 and S0002: 1.

HTJAE28	703321	6049	113 - 292	15801		H0487: 1 and H0423: 1.	
HTJAE42	668339	6050	245 - 379	15802		H0583: 1, H0487: 1, L0805: 1 and L0740: 1.	
HTJMB71	760226	6051	448 - 200	15803		H0265: 1, H0402: 1, H0488: 1 and H0522: 1.	
	760247	9602	448 - 200	19354			
HTJMD95	924240	6052	222 - 368	15804		H0488: 2	
HTJMH80	774407	6053	115 - 393	15805	Glu-1 to Tyr-7.	H0488: 3	
HTJMQ69	754605	6054	104 - 310	15806		H0591: 2 and H0488: 1.	
HTJMR65	729039	6055	1 - 120	15807	Gly-1 to Gly-9.	H0488: 2	
					Pro-16 to Leu-25.		
HTJMT23	948518	6056	2 - 241	15808		H0488: 2	
HTJMT75	766883	6057	253 - 447	15809		H0488: 2 and L0749: 1.	
HTJMU34	870316	6058	2 - 211	15810		H0488: 2	
HTJMU77	771677	6059	2 - 283	15811	Glu-17 to Ser-26, Lys-61 to Lys-70, Phe-86 to Cys-93.	H0488: 1, L0762: 1, H0543: 1 and H0422: 1.	
HTJMU87	870315	6060	1 - 300	15812	Glu-23 to Tyr-28.	H0069: 1 and H0488: 1.	
HTJMV80	775766	6061	29 - 220	15813	Thr-17 to Ser-24, Glu-28 to Lys-38, Ser-43 to Val-49, Ser-56 to Lys-64.	H0488: 2 and L0605: 1.	
HTJMW42	713132	6062	276 - 461	15814		H0271: 1 and H0488: 1.	
HTJMX71	759910	6063	67 - 255	15815	Tyr-54 to Glu-59.	S0212: 1 and H0488: 1.	
HTJMZ90	787655	6064	7 - 102	15816		H0488: 2	
HTJNB83	766881	6065	1 - 138	15817		H0488: 2	
HTJNC42	713142	6066	61 - 222	15818		S0212: 1 and H0488: 1.	8
HTJNC53	793328	6067	78 - 332	15819		H0488: 2	
HTJND12	870311	6068	196 - 417	15820		H0488: 2	
HTJND42	924726	6069	2 - 373	15821	Thr-1 to His-6, Phe-8 to Pro-24, Leu-69 to Ser-75.	H0488: 1 and S0002: 1.	
HTJNK36	924939	6070	172 - 441	15822	Arg-19 to Gly-28.	H0271: 2, H0488: 1, L0438: 1 and L0439: 1.	
HTJNM52	795110	6071	7 - 306	15823	Pro-24 to Ala-29.	T0002: 1, H0488: 1 and	

HTJNQ25	771941	6072				Arg-14 to His-23.		L0602: 1.	
HTJNR19	781702	6073	2 - 205	15824				H0318: 1 and H0488: 1.	
HTJNS23	870336	6074	3 - 161	15825				H0265: 1 and H0488: 1.	
			2 - 535	15826		Ser-8 to Lys-15, Pro-30 to Asp-36.		H0063: 1 and H0488: 1.	
HTJNV55	931039	6075	2 - 244	15827				H0581: 1 and H0488: 1.	
HTOAA48	870027	6076	2 - 265	15828				H0264: 2	
HTOAF15	866201	6077	2 - 610	15829		Tyr-51 to Glu-57, Ser-164 to Pro-171, Pro-185 to Lys-198.		AR051: 50, AR050: 37, AR054: 35 H0179: 2, L0519: 2, H0265: 1, H0264: 1, L0541: 1, S0053: 1 and S0216: 1.	
HTOAI35	799686	6078	53 - 121	15830				H0264: 3	
HTOAI69	529555	6079	2 - 97	15831		Gln-3 to Asn-8, Glu-22 to Arg-27.		H0264: 2	
HTOAI93	751902	6080	47 - 235	15832				H0264: 2	
HTOAK34	966800	6081	918 - 1196	15833		Ser-67 to Trp-77.		AR089: 1, AR061: 1 L0766: 2, H0264: 1 and H0521: 1.	
HTOAK36	921745	6082	1 - 204	15834				H0264: 2	
HTOAO19	954183	6083	81 - 164	15835		Tyr-31 to Arg-40.		H0264: 2	
HTOAO75	530192	6084	23 - 214	15836		Asn-6 to Phe-16.		H0264: 2	
HTOAT80	530186	6085	3 - 284	15837				H0264: 2	
HTOAU62	738214	6086	3 - 398	15838				H0416: 1 and H0264: 1.	
HTOAU94	620370	6087	10 - 195	15839				H0264: 1, S0002: 1 and H0521: 1.	
HTOAW19	530114	6088	85 - 180	15840		Leu-14 to Glu-24.		H0264: 2	
HTOAW26	530116	6089	2 - 61	15841				H0264: 2	
HTOAW37	507322	6090	177 - 392	15842				H0264: 2 and L0439: 1.	
HTOBA06	960618	6091	3 - 395	15843		Gly-1 to Tyr-9, His-37 to Pro-42, Lys-125 to Pro-131.		H0581: 1, H0272: 1 and S0428: 1.	
HTOBA10	839919	6092	1 - 168	15844				H0272: 1 and H0445: 1.	
HTOBE15	715538	6093	12 - 176	15845		Ser-6 to His-12, Lys-31 to Ser-36.		H0264: 1 and H0272: 1.	

HTOBF03	925407	6094	57 - 146	15846			H0272: 2
HTOBF07	954184	6095	10 - 141	15847	Pro-14 to Gly-35.		H0272: 2
HTOBF35	530325	6096	6 - 314	15848	Lys-10 to Gly-16.		H0272: 2
HTOBF27	682263	6097	2 - 250	15849	Arg-16 to Thr-22.		H0272: 1, S0002: 1 and L0748: 1.
HTOBF070	740977	6098	27 - 146	15850	Ser-3 to Pro-9.		H0272: 1 and H0488: 1.
HTOBF011	966734	6099	32 - 169	15851			H0063: 1 and H0272: 1.
	966776	6030	350 - 192	19355			
HTOBF92	530009	6100	199 - 411	15852	Arg-33 to Lys-38.		H0272: 2 and L0748: 1.
					Pro-60 to Lys-67.		
HTOBF26	523838	6101	2 - 187	15853	Ser-29 to Glu-34.		H0272: 2 and L0791: 1.
HTOBF23	530149	6102	2 - 142	15854			H0264: 2
HTOBF33	921426	6103	1 - 549	15855			L0766: 6, L0754: 4, L0779: 4, H0264: 2, L0747: 2 and L0777: 1.
HTOBF04	927826	6104	3 - 209	15856	Asn-1 to Glu-7.		H0264: 3
HTOBF78	530397	6105	20 - 160	15857	Val-40 to Glu-47.		H0264: 2
HTOBF07	880911	6106	90 - 215	15858	Gly-1 to Ser-7.		H0264: 2
HTOBF10	968505	6107	38 - 157	15859	Glu-1 to Glu-10.		H0264: 2
HTOBF16	909952	6108	1 - 492	15860	Arg-80 to Lys-88.		AR089: 22, AR061: 6
					Ser-94 to Arg-103.		H0264: 2 and L0766: 1.
HTOBF47	799691	6109	48 - 221	15861	Pro-14 to Ala-19.		H0264: 3 and L0361: 1.
HTOBF55	852560	6110	3 - 194	15862	His-2 to Pro-12.		H0264: 2 and H0321: 1.
HTOBF58	869998	6111	3 - 122	15863	Ile-11 to Tyr-18.		H0264: 2
					Met-29 to Glu-35.		
HTOBF60	558007	6112	19 - 216	15864	Thr-23 to Asn-34.		H0264: 2
					Gln-53 to Phe-58.		
HTOBF83	676384	6113	1 - 135	15865	Arg-27 to Val-33.		H0264: 2
HTOBF104	925386	6114	107 - 286	15866	Pro-31 to Lys-36.		H0264: 2
HTOBF137	708892	6115	70 - 234	15867	Ser-27 to His-34.		S0114: 1 and H0264: 1.
HTOBF181	507295	6116	47 - 178	15868	Val-3 to Glu-8.		H0264: 2
HTOBF185	799701	6117	171 - 302	15869	Phe-38 to Leu-44.		H0264: 4 and H0179: 1.
HTOBF458	811293	6118	3 - 215	15870	Ser-1 to Asn-12.		H0264: 3.
HTOBF21	869967	6119	38 - 163	15871			H0264: 2

HTODN27	684343	6120	183 - 326	15872			H0581: 1, H0264: 1 and H0521: 1.		
HTODN68	527862	6121	4 - 147	15873	Asp-35 to Ser-40.		H0179: 1 and H0264: 1.	Yq11	
HTOEAO6	960551	6122	86 - 211	15874	Lys-8 to Phe-14.		H0264: 3		400003, 415000
HTOEAI2	967754	6123	166 - 357	15875	Ala-37 to Met-44.		H0264: 2		
HTOEAA25	523546	6124	40 - 96	15876	Thr-9 to Asn-14.		H0264: 2		
HTOEC81	529834	6125	48 - 167	15877	Arg-1 to Thr-18.		H0264: 2		
HTOEC94	529839	6126	213 - 302	15878	Ser-25 to Arg-30.		H0264: 2		
HTOED10	839798	6127	61 - 318	15879	Gln-19 to Leu-24.		H0069: 1 and H0264: 1.		
HTOED61	742158	6128	214 - 339	15880	Ser-28 to Gly-35.				
HTOEG69	967362	6129	3 - 149	15881			S0142: 2 and H0264: 1.		
HTOET10	968492	6130	2 - 109	15882			H0264: 2		
HTOEV37	774641	6131	31 - 141	15883	Val-21 to Lys-33.		S0114: 1 and H0264: 1.		
HTOEVA0	529822	6132	286 - 414	15884			H0264: 2		
HTOEY50	529820	6133	77 - 220	15885			H0264: 2		
HTOEY72	659494	6134	136 - 255	15886			H0264: 2		
HTOFA04	845519	6135	1 - 129	15887			H0087: 1 and H0264: 1.		
	869987	9604	158 - 289	19356	Ala-1 to Lys-9.				
	927327	9605	458 - 129	19357	Lys-22 to Lys-28.				
					Lys-37 to Asp-43.				
HTOFB55	723256	6136	110 - 256	15888			H0264: 2		
HTOFB73	742153	6137	3 - 164	15889			H0264: 2		
HTOFC70	811291	6138	65 - 355	15890			H0264: 2		
HTOFD10	968469	6139	2 - 133	15891	Ile-20 to Asp-32.		H0264: 2		
HTOFD31	529674	6140	2 - 76	15892			S0114: 1 and H0264: 1.		
HTOFD57	529673	6141	101 - 304	15893			H0264: 2		
HTOFQ05	932662	6142	3 - 98	15894	Pro-5 to Leu-16.		H0083: 1 and H0264: 1.		
HTOFQ41	529617	6143	34 - 111	15895	Tyr-3 to Leu-11.		H0264: 2		
					Arg-14 to Gln-19.				
HTOFQ48	720880	6144	125 - 316	15896	Thr-12 to Asn-21.		H0318: 1 and H0264: 1.		
					Pro-39 to Gln-45.				
HTOF722	939903	6145	1870 - 2187	15897	Thr-11 to Gly-24.		AR061: 6, AR089: 2		
					Pro-27 to Asn-37.		H0264: 2		

	963302	9606					Glu-44 to Glu-49, Arg-69 to Arg-84.		
HTOFT34	527144	6146	750 - 905	19358	15898			AR089: 8, AR061: 5	
			106 - 270					H0264: 2 and L0367: 1.	
HTOGA06	960554	6147	1 - 249	15899				H0264: 2	
HTOGA25	529959	6148	37 - 156	15900				H0264: 2	
HTOGA35	751989	6149	185 - 337	15901			Ala-11 to Thr-17.	L0750: 3, L0551: 2, L0748: 2, H0486: 1, L0455: 1, H0264: 1, S0002: 1, L0764: 1, L0791: 1 and L0740: 1.	
HTOGA51	530331	6150	6 - 122	15902			Glu-23 to Lys-29.	H0264: 1 and H0272: 1.	
HTOGB55	781591	6151	157 - 390	15903				H0264: 2	
HTOGB92	529810	6152	40 - 132	15904			Lys-18 to Glu-24.	H0264: 2	
HTOGB16	927835	6153	22 - 102	15905				H0264: 2	
HTOGB20	960094	6154	191 - 334	15906			Thr-1 to Gly-13, Pro-26 to Leu-31.	H0318: 1 and H0264: 1.	
HTOGB28	529806	6155	141 - 335	15907				H0264: 2	
HTOGB43	650846	6156	2 - 172	15908			His-7 to Trp-12, Arg-15 to Trp-20, Tyr-22 to Trp-29.	H0264: 1 and H0445: 1.	
HTOGB50	529805	6157	222 - 434	15909				H0264: 2 and L0766: 1.	
HTOGB75	869973	6158	101 - 307	15910			Pro-19 to Gly-24, Ser-41 to Ser-46.	H0264: 2	
HTOGB86	507294	6159	3 - 332	15911			His-1 to Cys-10.	H0264: 2	
HTOGB50	529824	6160	139 - 231	15912				H0264: 2	
HTOGB65	618316	6161	339 - 572	15913				L0749: 2, H0264: 1 and S0002: 1.	
	869971	9607	292 - 624	19359					
	869972	9608	236 - 364	19360					
HTOGB30	961776	6162	13 - 105	15914			Phe-14 to Thr-24.	H0650: 1 and H0264: 1.	
HTOHB03	924986	6163	2 - 193	15915				H0381: 1 and H0264: 1.	
HTOHB42	714073	6164	361 - 158	15916				H0341: 1 and H0264: 1.	
HTOHB66	966688	6165	559 - 768	15917			Pro-18 to Pro-27.	H0318: 4, L0748: 2, H0264: 1 and H0543: 1.	

HTOHC78	577745	6166	18 - 239	15918	Ser-1 to Pro-7, Ala-14 to Thr-25, Pro-38 to Pro-44, Val-62 to Gly-73.	H0264: 2	
HTOHC84	537370	6167	69 - 266	15919	Cys-50 to Gly-56.	H0264: 2	
HTOHD27	799676	6168	3 - 128	15920		H0264: 2	
HTOHE53	531172	6169	1 - 129	15921		S0114: 1 and H0264: 1.	
HTOHG55	537366	6170	133 - 252	15922		H0264: 2	
HTOHI60	740611	6171	110 - 193	15923		H0318: 1 and H0264: 1.	
HTOHL22	968308	6172	113 - 241	15924		H0264: 2	
HTOHL35	537364	6173	1 - 201	15925	Arg-8 to Val-18,	AR061: 1, AR089: 0	
HTOHN54	537363	6174	78 - 266	15926	Arg-30 to Cys-36.	H0264: 2	
HTOHN24	971728	6175	3 - 122	15927	Pro-6 to Pro-14.	H0264: 2	
HTOHN42	537362	6176	28 - 147	15928	Lys-26 to Arg-33.	H0264: 2	
HTOHP13	530350	6177	4 - 417	15929	Ser-11 to Leu-16, Leu-20 to Arg-25. Pro-11 to Ala-17.	H0264: 2	
						H0264: 2, H0457: 1, H0271: 17q21 1 and H0543: 1.	109270, 109270, 109270, 109270, 109270, 113705, 113705, 144200, 148065, 148066, 148066, 148067, 148067, 148069, 148080, 154275, 168610, 171190, 176705, 185800, 200350, 221820, 232200, 249000, 252920, 253250, 600119, 600119, 601363, 601844
HTOHS32	678071	6178	46 - 201	15930	Pro-20 to His-39, Pro-47 to Ser-52.	H0416: 1 and H0264: 1.	
HTOHS68	507136	6179	3 - 311	15931	Asp-7 to Lys-16.	H0264: 2	
HTOHU09	920734	6180	1 - 168	15932		H0264: 2 and S0116: 1.	
HTOHV29	527865	6181	2 - 151	15933	Pro-9 to Glu-14.	H0264: 2	

HTOIH74	507139	6182	1 - 246	15934	Lys-1 to Ala-11, Pro-26 to Lys-41.	H0264: 2	
HTOIH261	557371	6183	274 - 405	15935	Asn-1 to Tyr-6.	H0264: 2	
HTOIA12	851032	6184	1 - 360	15936		H0457: 1 and H0264: 1.	
HTOIA68	584946	6185	2 - 139	15937	Leu-1 to Arg-8.	H0264: 2	
HTOIJ67	557354	6186	114 - 356	15938	Pro-24 to Asn-32, Ala-36 to Gln-43, Asp-48 to Ala-57, Pro-66 to Arg-71.	H0264: 2	
HTOIK06	954518	6187	34 - 210	15939		S0114: 1, H0318: 1 and H0264: 1.	
HTOIK08	959996	6188	238 - 483	15940	Pro-10 to Gln-17.	L0766: 2, H0306: 1 and H0264: 1.	
HTOIN17	557322	6189	1 - 276	15941	Gly-1 to Leu-6.	H0264: 2	
HTOIO29	506720	6190	63 - 230	15942		H0264: 2	
HTOIO30	557320	6191	92 - 244	15943	Leu-38 to Ser-43.	H0264: 2	
HTOIO79	557321	6192	1 - 174	15944	Gly-1 to Arg-9.	H0264: 2	
HTOIP32	869941	6193	207 - 470	15945		H0264: 2	
HTOIP53	557824	6194	122 - 289	15946		H0264: 2	
HTOIQ05	932440	6195	110 - 274	15947	Gly-2 to Lys-9, Asp-15 to Trp-20.	H0264: 2	
HTOIR12	537319	6196	229 - 80	15948		H0264: 2	
HTOIS27	485268	6197	282 - 413	15949	Gly-24 to Ser-29.	H0264: 1, H0543: 1 and H0423: 1.	
	934366	9609	188 - 292	19361	Ala-23 to Glu-28.		
HTOIT32	418666	6198	2 - 94	15950		H0271: 1 and H0264: 1.	
HTOIW02	920752	6199	1 - 243	15951	Ser-1 to Ser-11.	H0264: 2	
HTOIW40	669595	6200	113 - 271	15952		H0264: 1 and H0543: 1.	
HTOYY09	836003	6201	40 - 258	15953	Cys-1 to Glu-7, Ser-25 to Ser-32.	H0556: 1, H0264: 1 and H0422: 1.	
	707039	6202	107 - 241	15954	Ser-6 to Gly-12, Arg-40 to Ala-45.	H0264: 1, H0625: 1, L0666: 1 and L0740: 1.	
HTOIZ34		6203	213 - 353	15955	Leu-1 to His-6, Pro-11 to Trp-16.	H0556: 2, H0265: 1 and H0264: 1.	
HTOIA65	456824	6204	50 - 250	15956	Gln-25 to Arg-30.	H0264: 2	
HTOIA83	574764						



HTOJA96	968510	6205	27 - 107	15957	Tyr-42 to Trp-50.	
HTOJB59	574761	6206	176 - 316	15958	Gly-10 to Gly-15.	H0264: 2
HTOJB67	726577	6207	245 - 466	15959	Ser-8 to Met-15, Gly-24 to Pro-29, Lys-63 to Ser-74.	H0264: 2 H0445: 2 and H0264: 1.
HTOJF65	715820	6208	89 - 262	15960		S0114: 1 and H0264: 1.
HTOJG08	869926	6209	2 - 166	15961		H0264: 2
HTOJH24	766963	6210	2 - 391	15962	Arg-43 to Trp-48.	H0341: 1, H0264: 1 and H0543: 1.
HTOJI17	574735	6211	18 - 155	15963		H0264: 2, L0748: 1 and L0749: 1.
HTOJK48	574348	6212	29 - 217	15964		H0264: 2
HTOJK79	531320	6213	3 - 245	15965		S0114: 1 and H0264: 1.
HTOJK84	932741	6214	7 - 201	15966	Gly-32 to Ile-37.	H0264: 1 and H0445: 1.
HTOJL55	825165	6215	8 - 139	15967		S0114: 1 and H0264: 1.
HTOJL71	574529	6216	23 - 133	15968		H0264: 2
HTOJM06	936089	6217	396 - 644	15969	Ser-35 to Ala-48, Ser-73 to Gly-82.	H0264: 1, S0428: 1 and S0053: 1.
HTOJM70	799689	6218	1 - 159	15970		H0264: 3
HTOJS81	711021	6219	1 - 195	15971		H0556: 1 and H0264: 1.
HTOJT90	921016	6220	148 - 369	15972	Leu-1 to Thr-6.	H0341: 2, H0264: 2, L0471: 1 and H0542: 1.
HTSAA22	415775	6221	2 - 181	15973		H0402: 1 and H0087: 1.
HTSEU58	521995	6222	86 - 271	15974	Trp-10 to Lys-19, Glu-21 to Thr-48.	H0318: 1, H0087: 1 and L0747: 1.
HTSEZ77	935620	6223	105 - 266	15975	Pro-29 to Asn-34, Glu-43 to Lys-49.	H0402: 3 and H0087: 1.
HTSGB93	526625	6224	89 - 277	15976		H0087: 4 and L0752: 1.
HTSGM65	576062	6225	151 - 309	15977		20p11.2 121700, 122000, 188040
HTSGW24	971724	6226	295 - 609	15978	Ser-35 to Trp-44.	H0087: 2
HTSHA61	960474	6227	282 - 97	15979	Ala-47 to Phe-52.	H0087: 1 and S0052: 1.
HTSHD86	773726	6228	182 - 499	15980		H0087: 1 and H0116: 1.
HTSHF47	720403	6229	99 - 326	15981	Glu-1 to Pro-16.	H0063: 1 and H0087: 1. H0486: 1 and H0087: 1.

HTSHM38	972248	6230	2 - 604	15982	Asn-6 to Ser-15, Pro-29 to Arg-42, Pro-91 to Gln-108, Lys-123 to Arg-133, Ile-157 to Phe-168, Gln-171 to Val-178, Gly-185 to Pro-197.	AR051: 26, AR054: 20, AR050: 18, AR089: 6, AR061: 2 H0087: 1 and H0264: 1.	
HTUAA40	522671	6231	190 - 330	15983		H0185: 1 and S0052: 1.	
HTUAA86	522076	6232	19 - 96	15984	Val-1 to Thr-11.	H0185: 2 and L0764: 1.	
HTWAB64	522058	6233	2 - 151	15985	Ile-1 to Ile-6.	H0187: 1 and H0576: 1.	
HTWAH16	880725	6234	139 - 243	15986		S0114: 1 and H0187: 1.	
HTWAH51	614968	6235	60 - 167	15987	Lys-16 to Lys-21.	H0187: 1 and H0576: 1.	
HTWAM50	753217	6236	2 - 232	15988		H0341: 1 and H0187: 1.	
HTWBD74	716756	6237	3 - 173	15989	Pro-1 to Gly-10, Pro-17 to Phe-24, Thr-33 to Val-45.	S0002: 1 and H0436: 1.	
HTWBE77	781306	6238	531 - 719	15990		H0436: 1, L0731: 1 and H0445: 1.	
HTWBF61	579041	6239	62 - 187	15991		S0114: 1 and H0436: 1.	
HTWBF65	576623	6240	114 - 605	15992	Gln-59 to Leu-65.	H0341: 1 and H0436: 1.	
HTWBF82	854019	6241	2 - 217	15993		H0436: 2	
HTWBG40	711271	6242	42 - 329	15994	Cys-7 to Ser-13.	H0436: 1, L0748: 1 and H0422: 1.	
HTWBH73	708331	6243	32 - 211	15995	Ser-6 to Asp-12.	H0436: 2	
HTWBH75	842014	6244	3 - 314	15996	Asp-1 to His-6.	L0596: 2, H0436: 1, H0445: 1 and H0543: 1.	
HTWBH71	935647	6245	115 - 228	15997	Thr-6 to Gln-12, Glu-16 to Cys-25, Pro-28 to Leu-34.	H0436: 2	
HTWBL88	784564	6246	2 - 178	15998	His-21 to Glu-27, Gly-49 to Lys-59.	H0402: 1 and H0436: 1.	
HTWBN85	577510	6247	1 - 81	15999		S0114: 1 and H0436: 1.	
HTWBO55	732182	6248	385 - 525	16000		H0436: 2 and L0439: 2.	
HTWBR04	787303	6249	3 - 317	16001		H0381: 1 and H0436: 1.	
HTWBE201	578678	6250	1 - 102	16002	Arg-12 to Ser-33.	H0436: 2	
HTWCA19	582498	6251	131 - 436	16003		S0002: 1 and H0436: 1.	

HTWCA76	770109	6252	3 - 149	16004	Phe-40 to Phe-45.	S0218: 1 and H0436: 1.	
HTWCD27	658018	6253	1 - 186	16005	His-4 to Glu-27.	H0318: 1 and H0436: 1.	
HTWCD40	670812	6254	166 - 348	16006		H0436: 2	
HTWCE72	575962	6255	150 - 272	16007	Gly-3 to Phe-11, Pro-13 to Lys-38.	H0436: 2	
HTWCF06	935641	6256	195 - 371	16008	Gln-17 to Ala-22.	H0306: 1 and H0436: 1.	
HTWCF25	924008	6257	1 - 219	16009	Pro-18 to Lys-25.	H0436: 4	
HTWCF94	747197	6258	132 - 347	16010	Ser-1 to Pro-7, Pro-45 to Gly-54, His-58 to Ser-67.	H0436: 2	
HTWCG45	548176	6259	1 - 165	16011	Lys-17 to Thr-26.	S0278: 1 and H0436: 1.	6q14
HTWCG65	869547	6260	115 - 312	16012	Lys-31 to Lys-47.	AR089: 1, AR061: 0 H0650: 1 and H0436: 1.	136550, 203310, 269920, 602772
HTWCG69	575950	6261	3 - 92	16013	Ala-9 to Ala-17.	S0053: 1 and H0436: 1.	
HTWCI42	713022	6262	1 - 162	16014		H0436: 2	
HTWCK07	953482	6263	204 - 425	16015		S0114: 1 and H0436: 1.	
HTWCL29	740327	6264	2 - 79	16016	Ala-3 to Lys-13.	H0321: 1 and H0436: 1.	
HTWCM36	971129	6265	156 - 380	16017	Ser-2 to Ser-7.	H0305: 2, L0766: 2, H0436: 2, L0777: 2 and L0748: 1.	
HTWCM56	662321	6266	352 - 525	16018	Asn-1 to Glu-12.	S0142: 1 and H0436: 1.	
HTWCM33	577494	6267	230 - 475	16019	Ser-15 to Lys-20.	H0265: 1 and H0436: 1.	
HTWCM83	573580	6268	2 - 280	16020		H0305: 5 and H0436: 1.	
HTWCK25	575959	6269	138 - 338	16021		H0436: 2	
HTWCS11	967190	6270	94 - 204	16022		H0436: 2	
HTWCT42	713870	6271	1 - 150	16023		H0436: 2	
HTWCI61	575975	6272	86 - 232	16024		H0402: 2 and H0436: 1.	
HTWCC32	669745	6273	2 - 97	16025		L0766: 1.	
HTWCV05	920337	6274	1 - 150	16026		H0436: 2	
HTWCV69	869553	6275	100 - 369	16027	Glu-26 to Lys-34.	H0436: 2	
HTWDB72	835624	6276	197 - 376	16028	Tyr-40 to Asp-45, Asn-52 to Ser-57.	H0436: 2	
HTWDF82	921697	6277	3 - 233	16029	Phe-10 to Tyr-22, Arg-45 to Gly-57.	H0179: 1 and H0436: 1.	

HTWDH14	669560	6278	3 - 338	16030	Asp-68 to Asn-74, Ala-7 to Ser-12, Tyr-42 to Lys-50, Asn-62 to Ile-67, Thr-100 to Val-105.	H0521: 2, S0114: 1, L0654: 1, H0522: 1 and H0436: 1.	
HTWDH75	767368	6279	138 - 302	16031			
HTWDM43	715352	6280	147 - 314	16032	Pro-43 to Ser-51.	H0556: 1 and H0436: 1. S0474: 2, H0436: 1, L0749: 1 and H0542: 1.	
HTWDN01	916680	6281	75 - 221	16033	Glu-37 to Ala-42.	H0436: 2	
HTWDN17	664115	6282	1 - 345	16034	Asn-50 to Gly-55, Gln-69 to Leu-74.	H0436: 1 and H0543: 1.	
HTWDQ60	575939	6283	1 - 105	16035		H0436: 2	
HTWDS35	697825	6284	3 - 374	16036	Glu-15 to Tyr-24, Lys-29 to Lys-34, Leu-38 to His-43, Arg-47 to Gln-57, Ser-65 to Gln-78, Arg-86 to Ala-91, Leu-95 to Gln-100, Gln-107 to Gln-115.	L0803: 1, H0521: 1 and H0436: 1.	
HTWEA61	965453	6285	3 - 368	16037	Glu-24 to Thr-30, Ser-39 to Pro-44, Gln-1 to Gln-21.	H0436: 2	
HTWEC63	735003	6286	2 - 136	16038		S0114: 1 and H0436: 1.	
HTWED17	663714	6287	257 - 370	16039		S0218: 1, H0370: 1 and H0436: 1.	
HTWED28	686598	6288	269 - 400	16040	Arg-11 to Leu-19.	H0581: 1 and H0436: 1.	
HTWEG12	970538	6289	3 - 167	16041	Arg-39 to Gly-49.	H0436: 2	
HTWEH16	661860	6290	3 - 227	16042	Ser-42 to Ser-52, His-60 to Arg-70.	H0341: 1 and H0436: 1.	
HTWEJ14	792648	6291	171 - 371	16043	Phe-11 to Cys-17.	H0436: 2	
HTWEM37	449136	6292	3 - 260	16044	Pro-26 to Pro-36, Phe-54 to Gly-65.	H0264: 1 and H0436: 1.	
HTWEM63	745024	6293	346 - 77	16045			
HTWEW78	836799	6294	16 - 378	16046	Arg-74 to Tyr-80.	H0436: 1 and H0423: 1. H0486: 1 and H0436: 1.	
HTWES75	767257	6295	88 - 180	16047		H0436: 2	
HTWEU29	711673	6296	3 - 224	16048	Arg-56 to Ser-65.	L0439: 2, T0041: 1, H0436: 1q21-q22	104770, 107670,

HTWEX09	625458	6297	3 - 182	16049	Glu-1 to Ala-6.	H0436: 1 and H0444: 1.	110700, 135940, 145001, 146790, 152445, 152445, 159001, 159440, 159440, 159440, 174000, 179755, 182860, 182860, 182860, 186780, 191030, 191315, 230800, 230800, 266200, 600897, 600923, 601105, 601412, 601652, 602491
HTWEX18	666305	6298	210 - 353	16050		H0436: 1 and H0423: 1.	
HTWEX30	918641	6299	661 - 434	16051	Ser-18 to Phe-27, Ser-30 to Ser-40, Thr-50 to Lys-55.	H0436: 2 and L0751: 1.	
HTWFB37	708908	6300	3 - 164	16052	Thr-45 to Gly-53.	H0306: 1 and H0436: 1.	
HTWFB75	767253	6301	85 - 243	16053	Asp-6 to Gly-12, Glu-23 to Glu-29, Arg-37 to Gly-49.	S0116: 1, H0421: 1 and H0436: 1.	
HTWFF46	869499	6302	2 - 205	16054	Lys-25 to Trp-31, Arg-43 to Pro-53, Pro-59 to Lys-64.	H0436: 5	
HTWFG44	935270	6303	224 - 478	16055	Glu-31 to Gly-38, Ser-45 to Arg-50, Gly-56 to Ile-62, Pro-70 to Cys-81, Pro-13 to Val-18, Pro-20 to Trp-29.	H0457: 1 and H0436: 1.	
HTWFI19	668579	6304	216 - 332	16056		H0436: 4	
HTWFK15	869498	6305	139 - 282	16057		H0436: 2	
HTWFM20	917272	6306	195 - 536	16058	Pro-77 to Thr-86.	S0114: 1, H0063: 1 and H0436: 1.	
HTWFN64	757593	6307	105 - 278	16059		H0402: 1 and H0436: 1.	

HTWFO63	658473	6308	75 - 131	16060		H0542: 2, H0402: 1, H0318: 1, H0436: 1, L0753: 1 and L0758: 1.	
HTWFP14	869489	6309	3 - 209	16061	His-9 to Gly-14.	H0436: 2	
HTWFP33	916562	6310	79 - 309	16062	Arg-27 to Lys-33, Val-51 to Asp-56, Arg-64 to Gly-72.	H0402: 1, H0264: 1 and H0436: 1.	
HTWFP53	721768	6311	272 - 400	16063	Pro-1 to Gly-6.	H0402: 1 and H0436: 1.	
HTWFR17	663697	6312	20 - 253	16064		H0264: 1 and H0436: 1.	
HTWJA24	954881	6313	281 - 538	16065		H0576: 2, S0002: 1 and L0599: 1.	
HTWJA59	812705	6314	130 - 279	16066	Gly-30 to Gln-37.	H0576: 2	
HTWJA83	780990	6315	70 - 216	16067	His-25 to Asn-35.	H0576: 2	
HTWJA95	796259	6316	139 - 258	16068	Met-6 to Asn-11.	H0576: 2	
HTWJC43	715081	6317	49 - 207	16069	Pro-34 to Gln-40.		
HTWJC75	767134	6318	3 - 77	16070	Ser-11 to Gly-20, Glu-3 to Glu-13, Lys-15 to Asn-22.	H0583: 1 and H0576: 1.	2
HTWJC85	757125	6319	200 - 334	16071	Arg-27 to Tyr-32.	H0556: 1 and H0576: 1.	
HTWJF59	693116	6320	197 - 361	16072	Met-1 to Gly-25, Tyr-27 to Met-39.	H0576: 1 and H0444: 1.	
HTWJF66	576164	6321	204 - 443	16073	Gln-5 to Phe-10.	H0255: 1, H0576: 1 and H0423: 1.	
HTWJF95	745182	6322	78 - 248	16074		H0402: 1, H0576: 1 and H0423: 1.	
HTWJH57	812698	6323	68 - 265	16075	Tyr-4 to Ser-9, Pro-54 to Pro-61.	H0576: 1 and H0445: 1.	
HTWJL91	789487	6324	243 - 368	16076		S0114: 1, H0576: 1 and L0750: 1.	
HTWJM05	850055	6325	68 - 250	16077		H0402: 2 and H0576: 1.	
HTWJO45	717592	6326	43 - 192	16078	Thr-25 to Thr-32, Arg-43 to Lys-49.	H0576: 2 and L0776: 1.	
HTWJQ19	668466	6327	253 - 342	16079	Pro-23 to Val-29.	H0254: 1, H0576: 1 and H0422: 1.	
HTWJY82	698335	6328	1 - 93	16080		S0114: 1 and H0576: 1.	
HTWKG30	691882	6329	21 - 131	16081	Pro-1 to Trp-6.	H0589: 1 and H0576: 1.	

HTWKNS3	728014	6330	3 - 269	16082	Lys-12 to Met-24, Pro-43 to Asp-50, Glu-63 to Ser-68, Pro-73 to Ser-88.	H0576: 2	
HTWKTK61	709451	6331	44 - 118	16083	Leu-16 to Val-21.	H0576: 2	
HTWKXZ7	574092	6332	29 - 265	16084		S0053: 1, H0576: 1 and L0748: 1.	
HTWKZ04	614980	6333	109 - 294	16085	Phe-5 to Ile-11.	S0426: 1 and H0576: 1.	
HTWKZ17	529749	6334	234 - 365	16086		H0265: 2 and H0576: 1.	
HTWLD37	841951	6335	89 - 400	16087		S0053: 1 and H0576: 1.	
HTWLGI3	656772	6336	2 - 160	16088	Gln-43 to Gly-53.	H0255: 1 and H0576: 1.	
HTWLG76	795694	6337	267 - 539	16089		S0182: 1 and H0576: 1.	
HTXAK52	869460	6338	7 - 264	16090	Arg-1 to Gly-14.	H0265: 1 and H0318: 1.	
HTXAK78	530137	6339	174 - 347	16091	Leu-30 to Thr-35.	H0265: 2	
HTXAO23	676386	6340	15 - 92	16092		H0265: 1 and S0114: 1.	
HTXBF75	963029	6341	98 - 277	16093	Ser-23 to Gln-40.	H0265: 1 and H0556: 1.	
HTXBH24	418592	6342	2 - 151	16094		H0265: 2	
HTXBJ36	529759	6343	17 - 232	16095	Ser-13 to Leu-19.	H0265: 2	
HTXBJ92	706472	6344	227 - 361	16096		L0749: 2, H0265: 1, H0402: 1 and L0667: 1.	
HTXBK75	869401	6345	1 - 123	16097		H0265: 2	
HTXBN83	781443	6346	3 - 101	16098		H0265: 1 and S0218: 1.	
HTXBO11	967750	6347	176 - 400	16099	Lys-25 to Pro-31.	H0265: 1 and H0421: 1.	
HTXBO21	869461	6348	2 - 193	16100		H0265: 1 and H0542: 1.	
HTXBO51	970855	6349	146 - 592	16101	Leu-1 to Gln-19, Ala-84 to Gly-99, Pro-128 to Arg-142.	L0777: 2, H0265: 1, H0556: 1, H0255: 1, L0662: 1, L0375: 1, L0378: 1 and L0519: 1.	
HTXBX49	529662	6350	91 - 195	16102		H0265: 2	
HTXBX77	529661	6351	120 - 353	16103	Ser-59 to Gln-64.	H0265: 2	
HTXCB32	529615	6352	199 - 402	16104	Pro-21 to Lys-32.	H0265: 2 and L0596: 1.	
HTXCL28	952022	6353	56 - 175	16105		H0265: 2 and H0556: 1.	
HTXCU76	765655	6354	188 - 589	16106	Cys-122 to His-131.	H0265: 1, H0556: 1, H0457: 1 and L0766: 1.	
HTXCW16	522365	6355	50 - 265	16107	Val-10 to Cys-17.	H0265: 2	

HTXCW27	491257	6356	378 - 166	16108			H0265: 1 and H0522: 1.	
HTXCX05	932476	6357	148 - 303	16109			H0265: 1 and H0556: 1.	
HTXCV16	537413	6358	1 - 231	16110		Arg-12 to Gly-21, Ala-23 to His-32, Ala-59 to Gln-71.	H0265: 2	
HTXCV84	924996	6359	2 - 241	16111			H0265: 2	
HTXCZ16	537485	6360	213 - 416	16112		Glu-14 to Asp-19.	H0265: 2	
HTXDG37	968886	6361	71 - 466	16113		Arg-5 to Gly-13.	AR051: 14, AR050: 13 H0265: 1, L0637: 1, L0766: 1 and H0521: 1.	
HTXDI51	537474	6362	86 - 235	16114		Ser-28 to Val-34, Leu-43 to Arg-48.	H0265: 2	
HTXDO50	537487	6363	120 - 314	16115			H0265: 2	
HTXDQ25	869369	6364	1 - 306	16116		Ser-4 to Ser-15.	H0265: 1 and H0556: 1.	
HTXDS80	869435	6365	2 - 82	16117		Pro-1 to Lys-9.	H0265: 2	
HTXDW14	966588	6366	1145 - 432	16118		Tyr-17 to Asp-22, Pro-75 to Ser-81.	H0265: 1, H0583: 1 and L0741: 1.	
HTXDX61	784768	6367	1 - 423	16119		Arg-1 to Asp-16.	AR061: 6, AR089: 3 H0265: 1, H0264: 1, H0488: 1 and H0543: 1.	
HTXDX82	931113	6368	307 - 513	16120		Leu-20 to His-31.	H0265: 1 and H0556: 1.	
HTXDZ01	921486	6369	62 - 223	16121			H0265: 2 and S0134: 1.	
HTXEA41	974530	6370	198 - 422	16122		Thr-1 to Trp-10, Phe-18 to Arg-25.	H0265: 2	
HTXEA62	812833	6371	22 - 294	16123			H0265: 1 and S0428: 1.	
HTXEC53	529755	6372	118 - 369	16124		Thr-1 to Asn-7, Phe-21 to Ser-27.	H0265: 2 and L0589: 1.	
HTXEE70	537405	6373	2 - 157	16125		Pro-26 to Pro-37.	H0265: 1 and H0264: 1.	
HTXEM54	764221	6374	109 - 261	16126		Arg-4 to Pro-11, Thr-45 to Glu-50.	H0265: 2	138190, 254210, 271900, 600179, 600977, 601202, 601777
HTXEP20	537483	6375	3 - 194	16127		Gly-1 to Gln-9, Trp-11 to Arg-21, Gly-26 to Lys-32, Ala-38 to Phe-50.	H0265: 2	



HTXEP49	722181	6376	191 - 400	16128		L0589: 2, H0265: 1 and H0990: 1.
HTXEP76	527697	6377	114 - 365	16129		H0265: 1, H0305: 1 and S0426: 1.
HTXEQ05	932471	6378	65 - 235	16130		H0265: 2 and H0305: 1.
HTXET61	537471	6379	3 - 191	16131		H0265: 2
HTXET67	783784	6380	68 - 211	16132		H0265: 1 and H0556: 1.
HTXET75	664468	6381	1 - 174	16133		H0265: 1 and S0053: 1.
HTXEW14	932437	6382	37 - 219	16134	Lys-5 to Ala-11.	H0265: 2
HTXFB03	924995	6383	176 - 316	16135	Pro-15 to Gly-32.	H0265: 2, S0134: 1, S0474: 1, L0662: 1, H0576: 1 and L0599: 1.
HTXFB78	869408	6384	3 - 263	16136	Pro-34 to Phe-40.	H0265: 1 and H0556: 1.
HTXFB95	537399	6385	3 - 332	16137	Trp-21 to Gln-26, Thr-37 to Ser-43, Glu-78 to Cys-84, Gln-27 to Arg-32.	H0265: 2
HTXFC07	918644	6386	254 - 430	16138		H0265: 1, H0556: 1 and L0749: 1.
HTXFD75	537401	6387	94 - 231	16139	Ser-23 to Thr-28.	H0265: 2
HTXFB47	790855	6388	189 - 464	16140		H0556: 20, H0265: 8, H0638: 1, H0660: 1, H0521: 1 and L0749: 1.
HTXFF04	615593	6389	399 - 653	16141	Lys-18 to Pro-26.	H0265: 1, H0318: 1 and L0748: 1.
HTXFF66	973429	6390	91 - 438	16142	Pro-27 to Ser-32, Glu-41 to Ser-47, His-85 to Trp-90, Glu-92 to Val-111.	H0265: 2 and H0556: 1.
HTXFP91	780083	6391	145 - 258	16143	Thr-8 to Trp-19,	H0265: 2
HTXFI58	557838	6392	2 - 151	16144	Glu-24 to Tyr-29,	H0265: 2
HTXFK45	523385	6393	108 - 218	16145	Tyr-12 to Tyr-24,	H0265: 2
HTXFN69	869397	6394	3 - 476	16146	Val-7 to Phe-14,	H0265: 1, H0556: 1 and H0607: 1.
HTXFO65	926534	6395	442 - 549	16147	Glu-32 to Glu-39,	
HTXFS95	796025	6396	23 - 325	16148	Asp-9 to Lys-14, Pro-22 to Val-30.	H0265: 1 and H0370: 1.
						H0265: 1, H0556: 1 and

HTXFT03	924952	6397	2 - 100	16149		S0216: 1.	
HTXFT160	923937	6398	2 - 244	16150	Ala-1 to Cys-9, Cys-13 to Gly-18.	H0556: 7, H0265: 1 and L0748: 1.	
HTXFT22	537491	6399	167 - 322	16151		H0265: 2	
HTXGB20	933878	6400	1 - 93	16152		H0265: 1 and H0556: 1.	
HTXGB65	577711	6401	182 - 448	16153	Met-26 to Pro-39.	H0305: 2, H0265: 1, H0589: 1 and L0592: 1.	
HTXGD30	529724	6402	63 - 185	16154	Gly-5 to Leu-12.	H0265: 2 and H0556: 1.	
HTXGL73	529745	6403	15 - 242	16155		H0265: 2 and H0556: 2.	
HTXGN76	527016	6404	246 - 500	16156		H0265: 2 and H0318: 1.	
HTXGO74	869391	6405	1 - 84	16157		H0265: 2	
HTXGQ37	575461	6406	49 - 306	16158	Gly-40 to Lys-46.	H0265: 1 and S0114: 1.	
HTXHA16	661818	6407	46 - 351	16159	Gly-17 to Gln-23.	H0265: 2	
HTXHD24	727469	6408	53 - 274	16160		H0265: 2 and H0556: 1.	
HTXJA66	698461	6409	26 - 238	16161	Lys-41 to Leu-51.	H0265: 1 and H0556: 1.	
HTXJB15	660059	6410	131 - 277	16162		H0556: 2	
HTXJB35	707768	6411	43 - 348	16163	Gly-60 to Gly-67.	H0556: 1, H0625: 1, L0603: 1 and L0697: 1.	
HTXJC65	666565	6412	1 - 177	16164	Thr-11 to Tyr-19, Phe-32 to Phe-38.	H0556: 1, L0520: 1, L0794: 1 and H0422: 1.	
HTXJE76	745813	6413	166 - 318	16165		H0265: 1 and H0556: 1.	
HTXJF30	692607	6414	106 - 456	16166		H0556: 1, H0421: 1 and L0766: 1.	
HTXJG06	933230	6415	161 - 379	16167	Lys-1 to Gly-20, Leu-31 to Phe-36, Met-39 to Gly-48, Gln-57 to Arg-67.	H0543: 2, H0265: 1, H0556: 1 and H0423: 1.	
HTXJG19	974010	6416	213 - 335	16168		H0265: 1 and H0556: 1.	
HTXJG23	675315	6417	265 - 414	16169	Ser-24 to Lys-31, Val-45 to Ser-50.	H0556: 3	
HTXJG53	752160	6418	2 - 307	16170	Gly-19 to Gly-24, Ser-75 to Gly-83.	L0742: 2, H0556: 1, H0255: 1 and L0754: 1.	
HTXJH73	582143	6419	152 - 304	16171	Val-37 to Glu-42.	H0265: 1 and H0556: 1.	

HTXJ168	912611	6420	1 - 297	16172	Ile-2 to Cys-14, Asp-38 to Leu-43.	H0556: 2	
HTXJ155	959169	6421	61 - 288	16173		H0556: 2	
HTXJ123	675782	6422	77 - 340	16174	Pro-7 to Pro-14, Pro-55 to Ser-61, Gly-70 to Asp-76.	H0556: 1 and S0002: 1.	
HTXJ101	916254	6423	116 - 334	16175		S0052: 3, H0556: 1 and L0777: 1.	
HTXJ102	919691	6424	259 - 483	16176		H0556: 1, H0650: 1 and L0759: 1.	
HTXJ1073	783572	6425	1 - 138	16177	Gly-3 to Pro-11.	H0556: 2	
HTXJ104	566887	6426	298 - 684	16178	Ser-41 to Ser-49, Gly-77 to Arg-83, Arg-91 to Arg-96.	AR051: 46, AR050: 46, AR054: 28	
HTXJ168	752940	6427	79 - 288	16179	Gln-13 to Thr-18.	H0556: 2 and H0265: 1.	
HTXJ1034	703973	6428	82 - 225	16180	Arg-8 to Asp-17.	H0265: 1 and H0556: 1.	
HTXJ1061	663153	6429	2 - 361	16181	Pro-20 to Arg-28.	H0556: 2	
HTXJ1085	869123	6430	24 - 341	16182	Arg-52 to Ser-57, Gly-67 to Cys-78.	H0556: 2 and L0599: 1.	
HTXJ128	974315	6431	35 - 355	16183		H0265: 1, H0556: 1 and H0635: 1.	
HTXJ1073	719077	6432	373 - 513	16184	Ile-7 to Ser-12.	H0556: 1 and S0052: 1.	
HTXJ167	739586	6433	3 - 182	16185		H0265: 1 and H0556: 1.	
HTXJ164	746481	6434	430 - 570	16186	Gln-5 to Arg-12, Arg-16 to Cys-27.	H0556: 1, H0581: 1 and H0445: 1.	
HTXJ149	867083	6435	235 - 726	16187	Leu-21 to Gln-32, Gly-39 to Ser-63.	H0265: 1 and H0556: 1.	
HTXJ156	859854	6436	2 - 295	16188	Lys-1 to Thr-10.	H0556: 1 and S0216: 1.	
HTXJ151	872233	6437	8 - 229	16189	Lys-1 to His-7, Cys-37 to Arg-43.	H0556: 1, S0052: 1 and H0521: 1.	
HTXKB42	841986	6438	135 - 326	16190	Lys-19 to Thr-30.	H0556: 2	
HTXKC23	529756	6439	90 - 233	16191		H0556: 4, H0265: 2 and L0601: 1.	
HTXKD62	743435	6440	1 - 285	16192	Pro-10 to Lys-16, Asn-22 to Pro-33.	H0265: 1 and H0556: 1.	
HTXKH47	720186	6441	202 - 330	16193		H0556: 2	

HTXK193	796245	6442	1 - 264	16194	Cys-9 to Gly-14.	H0265: 1, H0556: 1 and L0748: 1.	I2	
HTXK155	671285	6443	121 - 315	16195	His-2 to His-7.	H0265: 1, H0556: 1 and L0543: 1.		
HTXK158	574788	6444	1 - 486	16196	Arg-1 to Leu-11, Ser-54 to Val-59, Gly-61 to Tyr-67, Pro-76 to Pro-94, Glu-99 to Ala-104.	H0271: 7, H0556: 1 and H0416: 1.		
HTXK189	767234	6445	203 - 385	16197	Thr-7 to Trp-15, Pro-19 to Ile-25, Gly-42 to Val-47.	H0556: 2		
HTXK195	795788	6446	43 - 234	16198	Pro-42 to Arg-47.	H0556: 2		
HTXK162	751050	6447	3 - 347	16199		H0556: 1, S0278: 1, L0805: 1 and H0422: 1.	I2q22	147440, 201470, 235800, 272300
HTXK125	664886	6448	2 - 175	16200	Glu-1 to Trp-13, His-36 to Arg-41.	H0265: 1 and H0556: 1.		
HTXK184	782951	6449	31 - 216	16201		H0265: 1 and H0556: 1.		
HTXK169	787551	6450	190 - 309	16202		H0556: 3		
HTXK142	713631	6451	321 - 452	16203	Lys-5 to Asn-11.	L0439: 4 and H0556: 2.		
HTXK125	934801	6452	137 - 364	16204	Glu-22 to His-37, Phe-67 to Arg-76.	H0556: 1, S0218: 1 and L0754: 1.		
HTXK155	947789	6453	3 - 305	16205	Asp-21 to Lys-26.	AR061: 2, AR089: 2, H0265: 1 and H0556: 1.	I3q12	121011, 121011, 129500, 253700, 601885, 602221
HTXK180	919676	6454	84 - 293	16206		H0556: 2		
HTXK169	754404	6455	42 - 410	16207	Arg-7 to Ala-19.	H0556: 2 and L0757: 1.		
HTXK116	869348	6456	221 - 376	16208	Arg-1 to Thr-10, Met-25 to Asp-39.	H0556: 2		
HTXK138	918567	6457	7 - 192	16209		H0556: 3 and H0443: 1.		
HTXK128	786409	6458	186 - 305	16210		H0063: 2 and H0556: 1.		
HTXK163	917316	6459	140 - 409	16211	Leu-1 to Ala-6, Ser-48 to Lys-53.	H0556: 1, S0114: 1 and S0116: 1.		
HTXK106	934555	6460	243 - 491	16212	Tyr-37 to Gly-43, Arg-45 to Val-52, Lys-63 to Gly-70.	H0556: 2 and S0052: 1.		

HTXLD68	752484	6461	3 - 272	16213	His-7 to Gly-17, Glu-23 to Ile-31, Ala-38 to Phe-43.	H0265: 1, H0556: 1 and H0436: 1.	
HTXLE37	790392	6462	22 - 228	16214		H0265: 1, H0556: 1 and L0545: 1.	
HTXLE56	861983	6463	350 - 535	16215	Lys-14 to Ser-19, Glu-36 to Arg-43.	H0556: 1, H0300: 1 and H0179: 1.	
HTXLE75	766798	6464	404 - 670	16216	Thr-1 to Lys-10, Glu-36 to Cys-50.	H0556: 1, H0264: 1, L0804: 1 and H0445: 1.	
HTXLE79	774125	6465	76 - 420	16217	Trp-29 to Arg-35.	H0265: 1 and H0556: 1.	
HTXLF08	958421	6466	3 - 119	16218	Ala-6 to Arg-11.	H0556: 1, L0665: 1, L0750: 1 and H0445: 1.	
HTXLG57	790610	6467	1 - 306	16219	Arg-28 to Gln-35, Thr-44 to Lys-51, Lys-55 to Gly-61.	H0556: 1 and H0090: 1.	
HTXLG64	974598	6468	392 - 667	16220		H0265: 2 and H0556: 1.	
HTXLH60	869336	6469	275 - 421	16221		H0556: 2	
HTXLI65	974018	6470	277 - 456	16222		H0556: 2 and H0265: 1.	
HTXLI91	787577	6471	178 - 381	16223	Gln-29 to Gln-35, Ser-58 to Gln-67.	H0556: 2	
HTXLJ70	756679	6472	401 - 631	16224	Arg-36 to Ala-42.	H0556: 1 and H0271: 1.	
HTXLK35	840283	6473	249 - 455	16225		L0766: 2, H0556: 1, H0656: 1, H0255: 1, L0740: 1, L0749: 1, H0444: 1 and L0592: 1.	
HTXLK95	795355	6474	161 - 286	16226	Arg-1 to Ser-15.	H0265: 1 and H0556: 1.	
HTXLK78	773071	6475	1 - 183	16227	Thr-24 to Gln-34.	H0556: 2	
HTXLL89	786475	6476	114 - 287	16228	Pro-41 to Thr-46.	H0556: 3 and H0265: 1.	
HTXLN72	951958	6477	3 - 158	16229		H0556: 3	
HTXLO02	918658	6478	126 - 356	16230		H0556: 2 and L0748: 1.	
HTXLO14	869132	6479	167 - 358	16231		H0556: 2	
HTXLP15	869202	6480	206 - 466	16232	Glu-27 to Met-32.	H0556: 4	
HTXLP18	973431	6481	67 - 279	16233	Glu-14 to His-21, His-36 to Lys-45.	H0556: 5 and H0265: 1.	
HTXLQ28	869331	6482	1 - 267	16234	Ser-8 to Asp-13, Gly-26 to Trp-32.	H0556: 2 and H0265: 1.	

HTXL733	919761	6483	1 - 147	16235	Arg-44 to Leu-49, Ser-18 to Asp-24,	H0556: 1 and H0543: 1.	
HTXL064	783411	6484	63 - 266	16236	Gln-9 to Phe-14, Asn-27 to Asn-32,	H0265: 1 and H0556: 1.	
HTXL082	779215	6485	1 - 297	16237	Pro-33 to Ser-43, Glu-59 to Phe-64,	H0265: 1 and H0556: 1.	
HTXLV39	972762	6486	210 - 482	16238		H0556: 2 and S0114: 1.	
HTXLV02	866819	6487	185 - 379	16239	Pro-13 to Arg-18, Leu-39 to Asn-44, Ser-58 to Tyr-63,	H0556: 1 and S0114: 1.	
HTXMC82	779198	6488	181 - 525	16240	Glu-31 to Phe-36,	H0556: 2 and H0265: 1.	
HTXMH13	928105	6489	319 - 480	16241	Ala-1 to His-7,	H0265: 1 and H0556: 1.	
HTXMH80	775487	6490	528 - 803	16242		H0556: 1 and H0069: 1.	
HTXMI18	921101	6491	82 - 282	16243		H0556: 1 and T0041: 1.	
HTXMI62	870456	6492	1 - 402	16244	Arg-4 to Pro-13, Gly-45 to Val-52,	H0556: 2	
HTXMI03	923001	6493	141 - 350	16245		H0265: 1 and H0556: 1.	
HTXMI50	830027	6494	2 - 358	16246	Asp-1 to Glu-6, Ile-14 to Ala-21, Pro-49 to Phe-67, His-73 to Ser-98,	H0265: 2, H0556: 1 and L0748: 1.	305450, 309600, 309603, 311360, 314580
HTXMQ28	823172	6495	2 - 232	16247	Gln-7 to Ala-17,	H0556: 2 and L0589: 1.	
HTXMQ81	869319	6496	210 - 536	16248		H0556: 2 and L0415: 1.	
HTXMP92	972759	6497	291 - 566	16249	Pro-10 to Asn-16,	H0556: 2 and H0265: 1.	
HTXMQ07	952206	6498	115 - 294	16250	Asp-1 to Asn-6,	H0556: 1, S0218: 1 and H0591: 1.	
HTXMT06	933376	6499	50 - 247	16251	Lys-61 to Ala-66,	H0265: 1 and H0556: 1.	
HTXMU10	961472	6500	2 - 100	16252	Ser-15 to Ala-20,	H0556: 2 and H0090: 1.	
HTXMX03	923005	6501	578 - 763	16253	Ser-22 to Lys-27,	H0556: 2, H0445: 2, L0748: 1 and H0444: 1.	
HTXMX32	789063	6502	3 - 212	16254	Glu-8 to Lys-13,	H0556: 1 and H0063: 1.	
HTXMX41	789332	6503	247 - 459	16255	Cys-10 to Ala-17, Thr-39 to Pro-45,	H0556: 1, H0063: 1, L0375: 1, L0750: 1 and L0758: 1.	
HTXMY15	780129	6504	253 - 501	16256	Glu-1 to Asn-9,	H0556: 2 and H0179: 1.	
HTXMY23	835044	6505	522 - 217	16257	Asp-19 to Val-24,	AR051: 38, AR050: 35,	

							AR054: 32 H0556: 1 and S0002: 1.		
HTXNM291	835045	9610	642 - 361	19362					
HTXND08	789619	6506	26 - 148	16258		Ile-33 to Ser-40.	H0556: 2		
	869311	6507	379 - 618	16259			H0556: 3, H0583: 1 and H0625: 1.		
HTXND91	789706	6508	317 - 592	16260			H0556: 1 and S0114: 1.		
HTXNF56	974048	6509	125 - 373	16261			H0556: 2 and H0265: 1.		
HTXNF80	966045	6510	151 - 282	16262			H0556: 2		
HTXNM82	973993	6511	218 - 346	16263			H0556: 3		
HTXNN03	922997	6512	262 - 405	16264			H0556: 2		
HTXNN33	780965	6513	692 - 483	16265		Gly-5 to Leu-10.	H0556: 5, L0766: 2, H0265: 1, H0521: 1 and L0748: 1.		
HTXNO48	963444	6514	154 - 255	16266			H0556: 2		
HTXNO58	916249	6515	115 - 414	16267		Gln-17 to Gln-39, Gln-62 to Lys-67, Leu-71 to Gln-76.	H0556: 2		
HTXNQ06	934303	6516	157 - 288	16268			H0556: 1 and H0445: 1.		
HTXNQ63	951939	6517	29 - 229	16269		Pro-1 to Gly-9, Lys-16 to Cys-27.	H0556: 3		
HTXNR01	913781	6518	151 - 396	16270			H0556: 2, H0265: 1, H0255: 1 and H0444: 1.		
HTXNR17	856465	6519	45 - 479	16271		Arg-1 to Lys-14, Glu-37 to Gly-43, Cys-47 to Gly-57, Ala-103 to Gly-108. Pro-14 to Pro-28.	H0556: 8, H0265: 1, S0114: 1, H0445: 1 and H0542: 1.		
HTXNT07	952165	6520	182 - 775	16272			L0740: 3, L0777: 2, H0556: 1, S0114: 1 and L0780: 1.		
HTXNT43	869398	6521	509 - 664	16273			H0265: 1 and H0556: 1.		
HTXNT76	869189	6522	481 - 732	16274			H0556: 2, L0439: 2, L0438: 1, L0747: 1 and L0749: 1.		
HTXNU51	972837	6523	3 - 350	16275			H0556: 3		
HTXNY70	869289	6524	67 - 315	16276		Val-27 to Leu-32.	H0556: 2		
HTXNT74	918076	6525	36 - 536	16277		Arg-1 to Gly-7, Phe-11 to Arg-23.	H0556: 2 and H0179: 1.		
HTXOC32	869280	6526	394 - 639	16278			H0556: 2 and H0265: 1.		

HTXOD62	806643	6527	13 - 234	16279			H0556: 1 and H0522: 1.
HTXOG84	929289	6528	20 - 358	16280	His-2 to Gly-10, Glu-22 to Arg-28.		H0265: 1, H0556: 1, H0657: 1 and H0543: 1.
HTXOI04	926909	6529	119 - 295	16281			H0556: 2
HTXOH60	869271	6530	2 - 172	16282			H0265: 1 and H0556: 1.
HTXOI50	869279	6531	348 - 554	16283			H0556: 4
HTXOI92	974039	6532	280 - 477	16284	Asn-1 to Arg-11, Pro-13 to Ser-24.		H0265: 2, H0556: 2, H0255: 2 and H0423: 1.
HTXOM10	963435	6533	1 - 108	16285	Met-13 to His-21.		H0265: 1 and H0556: 1.
HTXOO06	934248	6534	347 - 535	16286	Thr-55 to Glu-61.		H0556: 2, L0749: 2, S0218: 1 and L0748: 1.
HTXOO83	898860	6535	105 - 410	16287			H0556: 3, S0052: 2, S0134: 1, H0306: 1 and S0053: 1.
HTXOR11	965090	6536	2 - 148	16288	Lys-1 to Glu-6.		H0556: 2
HTXOR48	869253	6537	262 - 591	16289	Pro-46 to Glu-52, Thr-61 to Val-70.		H0556: 2 and L0595: 1.
HTXOR86	914739	6538	64 - 255	16290	Gln-35 to His-44.		H0556: 4
HTXOS47	965558	6539	34 - 198	16291	Gln-1 to Gly-8.		H0556: 3, L0759: 3, S0212: 1 and L0805: 1.
HTXOT42	974034	6540	74 - 433	16292			H0556: 7, H0265: 1 and L0748: 1.
HTXOI06	832057	6541	329 - 547	16293			H0556: 2 and H0486: 1.
HTXOU48	869252	6542	2 - 262	16294	Lys-1 to Tyr-11, Thr-13 to Lys-21, Ser-79 to Arg-87.		H0556: 2
HTXOI67	906909	6543	229 - 414	16295	Pro-22 to Ser-28.		H0556: 2
HTXOX02	918556	6544	329 - 553	16296	Arg-8 to Arg-14.		H0556: 1 and H0318: 1.
HTXOX42	920274	6545	209 - 553	16297	Pro-45 to Ser-53.		H0255: 2 and H0556: 1.
HTXOZ02	918566	6546	95 - 289	16298			H0556: 2
HTXPP93	954976	6547	2 - 178	16299			AR051: 33, AR054: 28, AR050: 24 H0556: 2
HTXPJ03	922877	6548	274 - 486	16300			H0556: 1 and H0271: 1.
HTXPK10	963397	6549	112 - 450	16301	Ser-1 to Thr-13.		H0556: 2 and H0521: 1.
HTXPK28	957888	6550	55 - 231	16302			H0556: 4 and H0265: 1.



HTXP091	869224	6551	114 - 350	16303	Gln-23 to Leu-28, Tyr-66 to Gln-74, Thr-30 to Thr-37.	H0436: 2 and H0556: 1.
HTXP092	869214	6552	330 - 518	16304		H0556: 2
HTXP093	799925	6553	3 - 635	16305		AR054: 10, AR050: 8, AR051: 2 H0265: 2 and H0556: 1. H0556: 2
HTXP094	869221	6554	36 - 320	16306	Arg-13 to Ser-21, Arg-25 to Gly-30, Lys-74 to Lys-81, Pro-46 to Ser-51.	
HTXP095	870074	6555	2 - 469	16307		AR089: 2, AR061: 2 H0556: 2
HTXP096	922884	6556	94 - 330	16308		H0265: 1 and H0556: 1.
HTXP097	869198	6557	252 - 485	16309	Leu-12 to Gln-24, Lys-52 to Ala-57.	H0556: 2
HTXP098	918494	6558	117 - 470	16310	Leu-7 to Gly-17, Thr-20 to Gly-29, Gln-45 to Phe-52, Phe-56 to Tyr-61, Glu-102 to Gln-116.	H0556: 2, H0265: 1 and L0523: 1.
HTXP099	869184	6559	375 - 605	16311	Thr-31 to Pro-38, Pro-68 to Gln-73.	S0114: 3 and H0556: 1.
HTXP100	961161	6560	337 - 522	16312	Arg-37 to Tyr-44.	H0556: 1 and H0255: 1.
HTXP101	974033	6561	444 - 698	16313	Ser-2 to Ser-8.	H0556: 3 and H0265: 1.
HTXP102	963403	6562	386 - 541	16314		H0265: 1 and H0556: 1.
HTXP103	965645	6563	121 - 303	16315	Thr-5 to Gly-10, Glu-52 to Leu-60.	H0556: 1 and S0053: 1.
HTXP104	963503	6564	1 - 447	16316	Pro-6 to Gly-12.	H0556: 2 and L0758: 1.
HTXP105	869139	6565	2 - 421	16317	Met-11 to His-26, Ser-67 to Ser-67, Ala-71 to Pro-77.	H0265: 1 and H0556: 1.
HTXP106	952030	6566	43 - 189	16318		H0556: 1 and H0543: 1.
HTXP107	918081	6567	196 - 459	16319		H0556: 2
HTXP108	869134	6568	105 - 386	16320		H0556: 2 and T0041: 1.
HTXP109	965596	6569	221 - 397	16321		H0556: 2
HTXP110	869133	6570	20 - 193	16322	Gln-1 to Gly-9, Lys-47 to Ser-53.	H0556: 1 and H0486: 1.

HTXRC17	973981	6571	91 - 330	16323	Gln-7 to Lys-13, Trp-65 to Thr-72.	H0556: 2 and S0218: 1.	
HTXRD51	921285	6572	13 - 219	16324	Pro-11 to Ala-18, Ser-38 to Arg-44, Lys-59 to Pro-68.	H0556: 1 and H0069: 1.	
HTXRE04	926371	6573	3 - 227	16325	Pro-32 to Arg-50.	H0556: 2	
HTXR02	918031	6574	1 - 321	16326	Ser-5 to Ser-15, Gly-73 to Asp-86.	H0556: 1 and H0318: 1.	
HTXRM86	975072	6575	3 - 578	16327		AR061: 2, AR089: 1 H0556: 3	
HTXR002	918009	6576	99 - 206	16328		H0556: 2	
HTXSB88	914627	6577	541 - 846	16329	Lys-26 to Glu-31, Ala-42 to Tyr-49, Glu-79 to Trp-95.	H0556: 1, H0650: 1 and L0731: 1.	
HTXSK91	915903	6578	298 - 462	16330	Glu-4 to Ser-14, Asp-20 to Leu-25.	H0556: 1 and H0521: 1.	301220, 302350, 306400, 309470, 309585, 311250, 312040, 312610, 314850
HTXSR92	973095	6579	132 - 428	16331		AR089: 0, AR061: 0 H0265: 1, H0556: 1 and H0083: 1.	
HTYNC52	869119	6580	451 - 251	16332	Leu-21 to Gly-27, Pro-39 to Lys-57.	S0216: 1 and S0452: 1.	
HTYSB62	768350	6581	26 - 250	16333	Val-1 to Ile-8, Glu-64 to Leu-72.	H0116: 2	
HTYSD32	702994	6582	1 - 258	16334		H0581: 1, H0116: 1 and L0746: 1.	
HTZAB04	973811	6583	382 - 648	16335	Thr-1 to Val-7.	S0318: 2 and S0140: 1.	
HUJAB25	878465	6584	3 - 353	16336	Gly-79 to Cys-84.	H0650: 2	
HUJAG07	951873	6585	215 - 3	16337	Tyr-2 to Thr-8, Lys-45 to Lys-71.	L0766: 4, H0318: 3, H0650: 1, L0772: 1 and L0774: 1.	
HUJAM39	911399	6586	631 - 1323	16338	Arg-1 to Trp-7, Arg-14 to Cys-32, Gln-65 to Leu-75.	H0457: 4, H0650: 1, H0656: 1, H0255: 1, H0641: 1 and L0766: 1.	

HUIJBL07	951874	6587	1 - 195	16339			H0650: 1 and H0318: 1.		
HUICB67	958914	6588	2 - 265	16340			H0318: 2, H0650: 1 and H0488: 1.		
HUJCM08	957784	6589	2 - 733	16341		Arg-9 to Trp-15, Ser-36 to Lys-49, Glu-93 to Ala-104, Pro-113 to His-118, Arg-124 to Gly-130, Arg-146 to Asp-153, Arg-159 to Arg-168, Pro-35 to Pro-40.	H0585: 2 and H0650: 1.	Sp15-33	
HUJCI161	933920	6590	304 - 606	16342			H0265: 1, H0556: 1 and H0650: 1.		
HUJCV04	926175	6591	3 - 329	16343		Arg-1 to Met-8.	H0650: 1 and H0580: 1.		
HUJDB08	957786	6592	579 - 773	16344			H0650: 1, H0318: 1 and H0090: 1.		
HUJDI58	920851	6593	12 - 359	16345			S0114: 1 and H0650: 1.		
HUUAJ10	914330	6594	552 - 764	16346		Ser-13 to Arg-20, Glu-23 to His-28.	H0656: 2, L0749: 2, H0657: 1 and H0264: 1.		
HUUAAP82	966685	6595	168 - 650	16347		Cys-14 to His-23, Arg-27 to Arg-45.	H0656: 2 and H0318: 1.		
HUUAAS12	968953	6596	3 - 656	16348		Ser-42 to Pro-47.	H0656: 2 and H0486: 1.		
HUUAUV06	966816	6597	88 - 396	16349		Gly-1 to Ser-9, Arg-19 to Arg-28, Ala-36 to Gly-43, Ser-73 to Pro-78.	H0656: 2, L0748: 1 and L0757: 1.	22q13.2-q13.31	188826, 250100, 250800, 250800
HUUAUV83	921559	6598	80 - 316	16350			H0254: 2 and H0656: 1.		
HUUCU06	933322	6599	115 - 354	16351		Val-39 to Asn-44.	H0656: 1 and S0053: 1.		
HUUCI07	951824	6600	158 - 361	16352			H0656: 2		
HUUCO12	969258	6601	3 - 53	16353			H0656: 2		
HUUCP08	957715	6602	247 - 429	16354			H0656: 2		
HUUCQ03	915269	6603	1 - 585	16355		Thr-40 to Lys-48, Lys-53 to Glu-58, Ser-74 to Ser-80, Phe-82 to Leu-91, Lys-141 to Asp-146, Arg-161 to Asp-167.	H0656: 1, H0581: 1, H0591: 1 and H0521: 1.		

HUUCS49	965987	6604	86 - 502	16356	Asp-177 to Lys-183. Gln-9 to Thr-16, Pro-36 to Gln-52.	H0656: 2	
HUUDG08	957721	6605	148 - 267	16357	Asn-18 to Gly-38.	H0656: 1 and H0506: 1.	
HUUDJ10	961717	6606	420 - 524	16358		H0656: 2	
HUUDS10	961706	6607	89 - 238	16359		H0650: 1 and H0656: 1.	
HWAEE23	675326	6608	497 - 706	16360		H0265: 1, H0556: 1, S0114: 1, H0581: 1, L0532: 1, L0758: 1 and L0599: 1.	
HWAEE55	719194	6609	98 - 349	16361	Asp-21 to Gly-26, Leu-50 to Ser-57.	H0370: 1 and H0581: 1.	
HWAEE90	778917	6610	87 - 287	16362		H0581: 1 and S0053: 1.	
HWAEE27	721151	6611	2 - 313	16363	Arg-28 to Thr-34.	H0485: 1 and H0581: 1.	
HWAEE66	908541	6612	3 - 320	16364	Arg-1 to Gly-11, Ser-40 to Asp-46.	AR089: 5, AR061: 2 H0583: 1, H0581: 1 and H0083: 1.	
HWAARF81	712203	6613	177 - 34	16365	Lys-6 to Gly-13.	H0581: 1 and H0457: 1.	
HWAAL31	697716	6614	2 - 550	16366	Gly-8 to Trp-13, Pro-34 to Thr-46, Glu-66 to Pro-79, Ala-85 to Ala-100, Gln-102 to Glu-120, Glu-143 to Gln-156, Ser-168 to Ser-177.	H0581: 1 and H0457: 1.	
HWAAM04	614973	6615	131 - 295	16367		H0265: 1 and H0581: 1.	
HWAAM23	675712	6616	136 - 384	16368		H0635: 1, H0581: 1, L0545: 1, L0748: 1 and L0591: 1.	
HWAAR36	915621	6617	195 - 353	16369	Phe-44 to Gln-53.	H0581: 2 and S0116: 1.	
HWAAW74	935602	6618	2 - 127	16370	Gln-1 to Gln-7.	H0402: 1 and H0581: 1.	
HWAAY03	923734	6619	176 - 373	16371		H0581: 1 and H0423: 1.	
HWAABA49	859878	6620	83 - 382	16372	Leu-72 to Phe-79.	H0069: 1 and H0581: 1.	
HWAAB37	870088	6621	2 - 382	16373	Gly-8 to Ala-18, Thr-92 to Thr-100.	H0581: 1 and H0521: 1.	
HWABE67	751418	6622	1 - 150	16374		H0581: 2	
HWABE94	838096	6623	406 - 182	16375	Val-22 to Gly-36, Pro-48 to His-55.	H0581: 2	

HWABF91	698131	6624	64 - 231	16376	Ser-2 to Gly-9.	H0581: 1 and H0422: 1.	
HWAB118	529803	6625	38 - 211	16377		S0114: 1, H0581: 1, H0264: 1 and S0053: 1.	
HWABQ57	734536	6626	3 - 125	16378	Arg-15 to Tyr-21, Pro-30 to Gln-41.	H0581: 2	
HWABS04	494837	6627	15 - 206	16379		H0581: 2, H0625: 1, S0428: 1, H0436: 1 and H0423: 1.	
HWABS51	719221	6628	3 - 209	16380		S0116: 1 and H0581: 1.	
HWABT82	784211	6629	1 - 117	16381	Phe-13 to Cys-18.	H0581: 2	
HWABW02	919441	6630	3 - 212	16382		H0581: 1 and S0052: 1.	
HWABW15	659944	6631	561 - 830	16383		H0581: 1 and H0444: 1.	
HWABW34	703861	6632	120 - 290	16384	Lys-15 to Pro-20.	H0581: 1 and H0487: 1.	
HWABW78	865145	6633	74 - 265	16385	Arg-11 to Cys-16.	H0581: 1 and S0142: 1.	
HWABX49	685187	6634	103 - 345	16386	Ser-14 to Lys-31, Pro-41 to Glu-55, Lys-63 to Glu-72.	H0581: 1 and H0522: 1.	
HWABX68	752825	6635	119 - 262	16387	Leu-1 to Val-14.	S0114: 1 and H0581: 1.	
HWABY12	968857	6636	281 - 577	16388	Asn-8 to Thr-16, Ser-28 to Phe-34, Thr-76 to Gly-85.	H0581: 1 and H0445: 1.	
HWACA38	943074	6637	2 - 577	16389	Asp-81 to Ile-89, Asn-112 to Ser-125, Leu-179 to Ser-189.	AR054: 255, AR050: 206, AR051: 141, H0271: 18, H0556: 9, H0265: 8, H0581: 8, L0761: 4, H0543: 4, H0422: 4, H0656: 3, H0457: 3, L0766: 3, T0002: 2, L0748: 2, H0220: 1, H0650: 1, S0282: 1, H0610: 1, H0069: 1, H0635: 1, H0179: 1, H0416: 1, H0031: 1, H0090: 1, T0041: 1, H0560: 1, H0529: 1, L0667: 1, L0649: 1, L0803: 1, L0659: 1, L0666: 1, S0052: 1, S0216: 1, H0702: 1, H0518: 1, H0521: 1.	

HWACB75	685247	6638	273 - 461	16390	Ile-22 to Asn-32, Gly-36 to Asp-49.	I, L0750: 1, H0445: 1, H0423: 1, H0677: 1 and H0506: 1.
HWACG21	868530	6639	216 - 1	16391		S0114: 1 and H0581: 1.
HWACG64	675517	6640	192 - 356	16392	Arg-38 to Ser-47.	H0581: 2
HWACG68	752710	6641	163 - 351	16393	Arg-41 to Gly-48.	H0581: 2 and L0697: 1.
HWACG94	670912	6642	185 - 322	16394		H0581: 2
HWACH33	686740	6643	76 - 264	16395		S0114: 1, H0581: 1 and H0543: 1.
HWACH49	722572	6644	128 - 349	16396	Pro-8 to Ser-14, Ser-55 to Lys-60.	H0581: 1 and S0052: 1.
HWACK78	753565	6645	31 - 222	16397	Lys-37 to Ala-43.	H0581: 2
HWACM17	662307	6646	2 - 148	16398		S0114: 1 and H0581: 1.
HWACP03	869938	6647	3 - 320	16399		H0581: 1 and H0422: 1.
HWACQ19	668093	6648	193 - 528	16400		H0581: 1 and H0264: 1.
HWACR28	685983	6649	212 - 403	16401		H0581: 2
HWACR77	771777	6650	1 - 117	16402		H0581: 3 and H0580: 1.
HWACU96	787349	6651	116 - 259	16403		H0581: 2
HWACV04	927275	6652	177 - 85	16404	Thr-9 to Leu-15.	H0581: 2 and H0436: 1.
HWACX82	705560	6653	61 - 186	16405		H0581: 1 and S0052: 1.
HWADA93	647703	6654	236 - 493	16406		H0581: 2, L0439: 2, H0318: 1, L0438: 1 and L0748: 1.
HWADE38	709487	6655	327 - 446	16407		H0581: 1 and H0421: 1.
HWADF26	957347	6656	1099 - 506	16408	Ala-45 to Asp-53, Asn-57 to Asp-68, Glu-84 to Cys-92, Asn-97 to Ser-105.	AR050: 78, AR054: 61, AR051: 60, AR061: 2, AR089: 1 H0581: 2, S0114: 1 and L0562: 1.
HWADG01	915567	6657	120 - 350	16409	Asn-25 to Gly-30.	S0114: 1 and H0581: 1.
HWADG26	680182	6658	226 - 423	16410		S0218: 1 and H0581: 1.
HWADG27	958200	6659	300 - 605	16411	Gly-20 to Asp-26.	H0581: 2
HWADI52	698651	6660	154 - 369	16412		H0581: 2
HWADI53	727820	6661	41 - 298	16413	Ala-1 to Tyr-8.	L0748: 3, H0581: 2 and

HWAD29	690074	6662	109 - 285	16414	Asp-33 to Ser-38.	H0402: 1.	
HWADL02	918986	6663	48 - 143	16415	Phe-12 to Thr-17.	H0581: 1 and H0444: 1.	
HWADL36	706697	6664	38 - 292	16416	Pro-11 to Ile-16, Ile-40 to Cys-51, Gly-62 to Tyr-67.	H0581: 2 H0581: 1 and H0521: 1.	
HWADM30	868520	6665	97 - 297	16417	Ser-2 to Pro-8, Phe-16 to Cys-22.	S0114: 1 and H0581: 1.	
HWADN19	657528	6666	297 - 109	16418	Leu-33 to Lys-50.	H0457: 2 and H0581: 1.	
HWADN21	670274	6667	203 - 418	16419	Cys-1 to Arg-6.	H0250: 1 and H0581: 1.	
HWADN46	924888	6668	264 - 572	16420		H0271: 2 and H0581: 1.	
HWADO54	729136	6669	253 - 393	16421		H0581: 2 and H0264: 1.	
HWADP26	680211	6670	3 - 635	16422	Pro-20 to Gln-25, Ser-31 to Cys-36, Leu-39 to Ser-52, Val-64 to Ser-73, Ala-89 to Gln-98, Ser-100 to Gln-109, Val-113 to Gln-119, Lys-146 to Pro-151.	S0114: 1 and H0581: 1.	
HWADQ27	682448	6671	444 - 584	16423		H0318: 1 and H0581: 1.	
HWADO91	693834	6672	212 - 358	16424		H0581: 2	
HWADR47	944042	6673	109 - 252	16425	Leu-1 to Trp-6.	S0212: 1 and H0581: 1.	4
HWADS43	675454	6674	12 - 185	16426	Tyr-18 to Cys-27.	H0581: 2, L0790: 1 and S0428: 1.	
HWADS53	717544	6675	1 - 105	16427	Asp-17 to Asn-23.	H0581: 2, L0805: 1 and H0521: 1.	
HWADV51	916669	6676	3 - 326	16428		H0581: 1 and H0436: 1.	
HWADV82	708688	6677	251 - 382	16429		H0581: 1 and H0271: 1.	
HWADW41	722343	6678	2 - 334	16430	Gly-35 to Thr-40.	H0581: 1, L0743: 1 and H0543: 1.	
HWADX46	718647	6679	337 - 570	16431	Glu-1 to Pro-9, Pro-37 to Lys-42.	H0265: 1 and H0581: 1.	
HWADX62	868509	6680	218 - 424	16432	Glu-6 to Ser-14, Thr-39 to Gln-45.	H0581: 2 and H0583: 1.	
HWADY59	738874	6681	2 - 262	16433	Thr-5 to Lys-17.	H0581: 1, H0063: 1, H0436:	

HWADZ21	670270	6682	2 - 166		16434	Ser-1 to Asn-10.	1, H0444: 1 and L0599: 1.
HWADZ84	782682	6683	2 - 97		16435		H0581: 1 and S0142: 1.
HWAEAS5	731094	6684	28 - 240		16436	Ala-1 to Leu-6.	H0581: 2
HWAEAE60	964384	6685	224 - 403		16437	Leu-6 to Glu-15.	S0218: 1 and H0581: 1.
HWAEAB19	750811	6686	2 - 154		16438		H0581: 1 and H0445: 1.
HWAEAB94	778009	6687	2 - 184		16439	Lys-46 to Glu-60.	S0114: 1 and H0581: 1.
HWAE75	852921	6688	506 - 709		16440	His-3 to Arg-13. Leu-18 to Leu-23.	H0581: 1 and H0457: 1.
							H0581: 3, H0318: 2, L0766: 2, L0438: 2, L0439: 2, L0766: L0758: 2, H0485: 1, L0451: 1, L0542: 1, L0745: 1 and H0543: 1.
HWAE601	915064	6689	70 - 168		16441		H0581: 1 and H0444: 1.
HWAEK82	868489	6690	263 - 463		16442		H0581: 2 and H0543: 2.
HWAE20	868490	6691	119 - 472		16443		H0580: 1, H0581: 1 and L0748: 1.
HWAFD32	850048	6692	43 - 279		16444	Leu-1 to Pro-6. Pro-13 to Glu-18, Gly-51 to Gly-62, Arg-71 to Tyr-79.	H0402: 1 and H0581: 1.
HWAFG08	958173	6693	3 - 149		16445	Asn-23 to His-35.	S0114: 1, H0402: 1 and H0581: 1.
HWAFR09	973926	6694	156 - 341		16446		H0581: 1 and H0090: 1.
HWAF103	92832	6695	288 - 413		16447		S0134: 1 and H0581: 1.
HWAFW34	926801	6696	6 - 179		16448	Ser-8 to Val-16, Ser-43 to Cys-49.	H0581: 2
HWAFW39	947915	6697	188 - 370		16449		AR089: 2, AR061: 1 H0255: 1 and H0581: 1.
HWAFX39	907631	6698	1 - 369		16450	Asn-36 to Arg-48, His-107 to Tyr-112.	H0581: 1 and H0543: 1.
HWAFY24	868427	6699	113 - 361		16451		H0581: 2
HWAEZ13	873396	6700	74 - 415		16452	Ser-35 to Arg-48, Leu-79 to Asn-88.	H0635: 2, H0581: 1 and H0521: 1.
HWAEZ82	868426	6701	52 - 288		16453	Gly-12 to His-17.	H0581: 2
HWAGC76	941311	6702	52 - 399		16454	Pro-21 to Ala-27, Ala-49 to Ala-56.	S0278: 8, S0344: 5, L0740: 3, H0250: 2, H0581: 2.



HWAGD11	965895	6703	3 - 530	16455	Pro-38 to Lys-44, Arg-64 to Glu-79, Pro-129 to Gly-139, Arg-145 to Pro-151, Pro-154 to Arg-159, Lys-39 to Pro-47.	H0457: 2, S0142: 2, L0774: 2, L0749: 2, S0116: 1, H0031: 1, H0063: 1, S0144: 1, S0002: 1, L0800: 1, L0744: 1, L0777: 1 and H0653: 1.
HWAGD58	869383	6704	3 - 224	16456		H0581: 1 and H0542: 1.
HWAGE40	926279	6705	2 - 262	16457	Pro-31 to Phe-36, Gln-39 to Gln-45.	H0556: 1, H0581: 1 and L0776: 1.
HWAGG79	930876	6706	32 - 286	16458	Glu-30 to Leu-48, Cys-53 to Ser-60.	H0250: 2 and H0581: 1. H0581: 1 and H0543: 1.
HWAGJ49	838759	6707	357 - 536	16459		H0581: 2
HWAGK95	868403	6708	238 - 441	16460	Gly-37 to Leu-42.	H0581: 2 and H0264: 1. H0581: 1 and H0457: 1.
HWAGL53	842011	6709	180 - 422	16461	Ser-68 to Val-74, Pro-87 to Arg-97.	AR089: 1, AR061: 0 H0305: 1, H0581: 1, L0745: 1 and L0747: 1.
HWAGM33	888685	6710	526 - 1140	16462	Cys-153 to Trp-164, Arg-172 to Cys-178, Gly-29 to Ser-35.	
HWAGX37	959586	6711	390 - 662	16463		H0457: 3, H0581: 1 and H0445: 1.
HWAGY05	931001	6712	127 - 369	16464		H0264: 2, H0556: 1, H0581: 1 and H0444: 1.
HWAGZ22	868523	6713	70 - 378	16465	Pro-33 to Phe-41, Phe-52 to Cys-58, Pro-88 to Cys-93.	H0581: 2, H0224: 1 and H0160: 1.
HWAH110	960646	6714	1344 - 280	16466		H0581: 1 and T0041: 1.
HWAH594	909667	6715	1 - 471	16467	Pro-52 to Ser-60, Ala-92 to Gly-102.	H0581: 2, H0341: 1, H0521: 1, H0543: 1 and S0452: 1.
HWAE02	918215	6716	428 - 607	16468		H0581: 2
HWBAB43	715110	6717	3 - 341	16469	Ile-2 to Asp-8,	H0580: 1 and H0521: 1.

HWBAC22	823086	6719	932 - 657		Asp-36 to Glu-44, Arg-62 to Leu-67, Arg-74 to Ala-80, Pro-100 to Gly-106.				
HWBAC69	582109	6718	2 - 388	16470	Ser-1 to Thr-16, Lys-27 to Glu-32, Ala-34 to Gly-40, Ala-79 to Gly-88.			H0580: 2, L0748: 1 and S0308: 1.	19q13.3 113900, 126340, 126391, 130410, 134790, 138570, 160900, 173850, 258501, 600040, 602225, 602225
HWBAC22	823086	6719	932 - 657	16471	Met-36 to Tyr-44.			H0580: 1 and H0457: 1.	
HWBAL44	959449	6720	566 - 3	16472	Pro-27 to Thr-32, Pro-42 to Trp-48, Asp-109 to Arg-115, Phe-126 to Asp-136, Thr-145 to Lys-151.			H0580: 2, S0002: 2 and L0779: 2.	
HWBAN54	729329	6721	77 - 217	16473	Glu-16 to Phe-23, Leu-35 to Lys-42.			H0580: 1 and H0444: 1.	
HWBAQ16	868363	6722	767 - 925	16474				H0445: 2, H0580: 1, L0761: 1 and L0697: 1.	
HWBAR44	715963	6723	2 - 187	16475	Ala-47 to Asp-52.			H0580: 2 and L0747: 2.	
HWBAR90	788700	6724	427 - 561	16476	Ser-1 to Lys-6.			H0580: 1 and H0416: 1.	
HWBAS92	960197	6725	321 - 575	16477	Asn-1 to His-10, Ala-40 to Ile-45.			H0305: 2, H0580: 1 and L0518: 1.	
HWBAX06	935032	6726	1 - 117	16478	Gly-9 to Gly-21.			H0580: 1 and H0486: 1.	
HWBAX39	630220	6727	282 - 467	16479	Asp-1 to Cys-6.			H0580: 2	
HWBAZ51	707033	6728	246 - 413	16480	Arg-10 to Ser-15, Lys-34 to Pro-41.			H0580: 1 and H0264: 1.	
HWBBA64	927809	6729	120 - 371	16481	Leu-40 to Lys-45.			H0580: 1 and H0264: 1.	
HWBBA83	775401	6730	365 - 571	16482	Gly-22 to Gly-40, Pro-47 to Asn-54.			H0402: 1 and H0580: 1.	
HWBBB48	559708	6731	32 - 250	16483	Gly-13 to Trp-18, Ile-29 to Thr-35, Ala-42 to Ala-52.			H0580: 2	
HWBBE01	851029	6732	107 - 361	16484				H0580: 1 and H0457: 1.	
HWBBF31	868359	6733	3 - 230	16485				H0580: 1 and H0551: 1.	

HWBB120	669491	6734	34 - 243	16486	Met-1 to Gln-18.	H0580: 2	
HWBB154	971547	6735	45 - 200	16487	Glu-38 to Lys-45.	H0580: 1 and H0128: 1.	
HWBB178	723183	6736	294 - 500	16488	Glu-57 to Gln-64.	L0748: 2, H0580: 1, L0171: 1, L0662: 1, S0052: 1 and H0522: 1.	
HWBBM28	686259	6737	177 - 374	16489		S0116: 1 and H0580: 1.	8q24-qter
HWBBO46	718858	6738	428 - 571	16490		H0580: 1, L0748: 1 and H0444: 1.	
HWBBO40	660971	6739	85 - 282	16491		H0254: 1 and H0580: 1.	
HWBBO86	656704	6740	10 - 228	16492		S0298: 1 and H0580: 1.	
HWBBR65	747723	6741	32 - 232	16493	Gly-1 to Ser-9.	AR089: 28, AR061: 24, L0748: 2, H0580: 1 and H0421: 1.	
HWBBR78	663728	6742	148 - 354	16494	Asn-30 to Gln-39.	H0580: 1 and H0521: 1.	
HWBBV03	868346	6743	109 - 270	16495		H0402: 1 and H0580: 1.	
HWBBV59	682344	6744	232 - 348	16496	Trp-2 to Asp-11.	H0580: 2	
HWBBV83	771349	6745	3 - 257	16497		H0543: 2 and H0580: 1.	
HWBBW11	966665	6746	1 - 231	16498	Leu-10 to Ser-15, Gly-39 to Gly-66, Arg-72 to Cys-77.	H0402: 1, H0580: 1 and L0055: 1.	
HWBBX08	860880	6747	209 - 580	16499		H0580: 1 and H0271: 1.	
HWBBY01	916036	6748	218 - 436	16500	Leu-33 to Ile-40.	L0766: 2, S0134: 1, H0580: 1, L0060: 1 and L0747: 1.	
HWBBY74	711633	6749	239 - 397	16501	Ser-10 to Pro-21.	H0580: 1 and H0087: 1.	
HWBCA14	768667	6750	231 - 368	16502		H0580: 1 and S0002: 1.	
HWBCA22	674236	6751	209 - 472	16503	Lys-47 to Ser-54.	H0580: 2	
HWBCA92	712731	6752	320 - 442	16504	Lys-1 to Leu-7.	H0580: 1 and H0179: 1.	
HWBCC85	784189	6753	188 - 316	16505	His-1 to Lys-21.	H0580: 2	
HWBCC90	744828	6754	67 - 210	16506		H0580: 2	
HWBCF85	738552	6755	155 - 277	16507	Gly-1 to Ser-12, Leu-19 to Arg-26, Pro-40 to Arg-46, Asp-52 to Asn-61, Arg-65 to Lys-71, Lys-76 to Gly-84.	H0580: 1 and H0318: 1.	
HWBCG35	707803	6756	3 - 299	16508		H0580: 1 and H0090: 1.	

HWBCG45	527679	6757	13 - 177	16509	Pro-17 to Asn-31.	H0305: 2, H0580: 1 and H0576: 1.	
HWBCI65	868326	6758	267 - 106	16510	Pro-18 to Lys-41.	H0580: 2	
HWBCN09	868325	6759	141 - 347	16511		H0580: 1 and H0635: 1.	
HWBCN55	715064	6760	63 - 326	16512	Arg-25 to Asn-32.	H0580: 1 and H0581: 1.	
HWBCQ10	964233	6761	195 - 377	16513	Tyr-45 to Lys-51.	H0580: 1, H0581: 1 and L0529: 1.	
HWBCQ29	943720	6762	9 - 251	16514	Pro-14 to Met-22, Lys-25 to Ile-31, Ala-55 to His-65, Thr-74 to Lys-81.	AR089: 1, AR061: 1, H0580: 1, H0416: 1 and H0521: 1.	
HWBCS21	960025	6763	148 - 513	16515	Pro-1 to Lys-12, Pro-30 to Gln-35.	S0114: 1 and H0580: 1.	
HWBCS66	765986	6764	545 - 727	16516	Asp-10 to Gly-18.	H0186: 1 and H0580: 1.	
HWBCU82	955858	6765	176 - 382	16517	His-11 to Pro-19.	H0271: 2 and H0580: 1.	
HWBCW04	925649	6766	302 - 541	16518		H0580: 1 and H0445: 1.	
HWBCW88	882592	6767	283 - 636	16519	Lys-21 to Pro-44, Ser-61 to Arg-67, Asn-70 to His-75.	L0731: 5, L0779: 3, L0777: 2, H0580: 1, S0344: 1, L0768: 1, L0751: 1, L0745: 1, L0747: 1 and L0759: 1.	
HWBCW90	731395	6768	142 - 282	16520	Ser-3 to Asn-10.	H0580: 3	
HWBCY30	828318	6769	3 - 476	16521	His-1 to Asp-20, Pro-52 to Phe-57, Gly-64 to Glu-75.	H0580: 1, H0090: 1, L0662: 1, L0766: 1, L0776: 1, L0792: 1, L0740: 1, L0777: 1 and L0752: 1.	
HWBDL50	724145	6770	301 - 513	16522		H0580: 1, H0581: 1 and H0271: 1.	
HWBDN24	963498	6771	741 - 1040	16523		H0521: 2, H0580: 1 and H0522: 1.	
HWBDP31	697705	6772	136 - 426	16524	Asp-11 to Leu-16, Trp-35 to Leu-41, Arg-54 to Pro-60.	H0580: 2	
HWBDR66	750586	6773	370 - 522	16525		H0580: 2	
HWBDS89	771950	6774	76 - 270	16526	Thr-4 to Leu-29, Tyr-42 to Gly-48.	H0580: 2	
HWBDT15	659939	6775	62 - 184	16527		H0580: 1 and S0052: 1.	

HWBDW71	597259	6776	313 - 438	16328		H0580: 2		
HWBEA72	950702	6777	3 - 203	16329		H0580: 2		
HWBEI17	924913	6778	3 - 182	16330		S0116: 1 and H0580: 1.		
HWBEI53	968493	6779	26 - 118	16331		H0580: 1 and H0271: 1.		
HWBEI53	727617	6780	123 - 287	16332		H0580: 2		
HWBEI70	735390	6781	169 - 456	16333		H0580: 2		
HWBEI85	954600	6782	46 - 204	16334		H0580: 2 and H0179: 1.		
HWBEV44	716215	6783	43 - 195	16335		H0580: 2 and L0740: 1.		
HWBEV94	788574	6784	166 - 2	16336		H0580: 2		
HWBEZ27	682383	6785	1 - 489	16337		AR089: 1, AR061: 0 H0580: 2, L0663: 2, L0662: 1, L0657: 1, L0659: 1, L0666: 1, L0438: 1, L0748: 1 and L0777: 1.	15q15	177070, 177070, 182500, 218000, 227220, 243500, 600839, 601800
HWBEV38	709497	6786	226 - 366	16338		H0580: 1 and H0069: 1.		
HWBEZ47	719940	6787	2 - 160	16339		H0580: 2		
HWBEZ69	664699	6788	127 - 345	16340		H0580: 1, H0264: 1 and H0625: 1.		
HWBEZ90	923008	6789	181 - 336	16341		H0580: 2, L0775: 2 and H0521: 2.		
HWBEZ94	856472	6790	188 - 340	16342		H0580: 1, L0521: 1 and H0445: 1.		
HWBEF76	769769	6791	310 - 420	16343		H0580: 2		
HWBEF09	625162	6792	1 - 195	16344		H0580: 2		
HWBEF35	722921	6793	173 - 328	16345		H0580: 2		
HWBEF96	708955	6794	155 - 406	16346		H0580: 2		
HWBEF58	735701	6795	1 - 162	16347		H0580: 2		
HWBEF78	773289	6796	117 - 365	16348		H0580: 2		
HWBFN30	691611	6797	188 - 3	16349		H0580: 2		
HWBFY69	754729	6798	135 - 257	16350		H0580: 2		

HWBFY88	701904	6799	1 - 111	16551			H0580: 2		
HWBG808	958611	6800	1 - 84	16552	Thr-16 to Glu-21.		H0580: 1 and H0522: 1.		
HWBG847	948714	6801	2 - 124	16553			H0580: 2		
HWBGD16	924830	6802	102 - 302	16554			H0580: 1 and H0477: 1.	10q26	176943, 176943, 176943, 176943, 176943, 258870, 263700, 601969, 601969, 602084
HWBGF15	659687	6803	17 - 220	16555			H0265: 1 and H0580: 1.		
HWBG101	915603	6804	23 - 178	16556			H0580: 1 and H0370: 1.		
HWBG113	656308	6805	55 - 276	16557	Ser-25 to Ser-30.		H0580: 2		
HWBG130	691511	6806	105 - 266	16558			H0580: 2		
HWWA206	933736	6807	1 - 213	16559			H0318: 3, S0134: 1, S0218: 1, H0657: 1 and L0758: 1.		
HWWD103	922463	6808	113 - 301	16560	Val-7 to Leu-22, Cys-26 to Met-34, Gly-57 to Ser-63.		H0657: 2, H0255: 1 and H0318: 1.		
HWWEF06	913697	6809	3 - 128	16561	Gln-24 to Ile-30.		H0657: 2, L0770: 1, L0774: 1, L0666: 1, L0439: 1 and L0777: 1.		
HWWE10	961741	6810	122 - 436	16562	Pro-9 to Ile-14.		H0657: 2, L0532: 1 and L0666: 1.		
HWWEF56	951811	6811	157 - 426	16563			H0657: 2, L0779: 2, L0766: 1 and L0655: 1.		
HWWEA12	968958	6812	151 - 285	16564	Lys-8 to Gly-19, Gly-37 to Arg-45.		H0657: 1, H0318: 1 and H0445: 1.		
HWWEF07	951819	6813	39 - 503	16565	Val-42 to Leu-56.		H0657: 3 and H0521: 1.		
HWWFU42	961739	6814	44 - 247	16566	Pro-17 to His-23.		H0657: 2		
HYAAB66	463413	6815	62 - 325	16567			H0583: 1 and H0422: 1.		
HYAAC60	731763	6816	349 - 552	16568	Leu-22 to Gln-29, Phe-31 to Ala-37.		S0218: 1 and H0583: 1.		
HYAAD03	923797	6817	229 - 336	16569			H0583: 2		
HYAAD67	664597	6818	67 - 180	16570			H0583: 2 and S0052: 1.		
HYAAD95	920280	6819	299 - 625	16571	Lys-14 to Tyr-31, Pro-39 to Phe-45, Tyr-86 to Ala-92.		H0318: 7, H0445: 7, L0748: 6, L0766: 4, H0657: 3, L0751: 3, H0423: 3, H0583: 3.		

HYAAAF33	915050	6820	136 - 396	16572	Ser-50 to Thr-58, Thr-64 to Gly-72.	H0583: 1, L0766: 1 and H0522: 1.	
HYAAAH26	681251	6821	99 - 224	16573	Asn-19 to Tyr-28.	H0583: 1 and H0318: 1.	
HYAAAH36	947242	6822	47 - 241	16574	Arg-44 to Cys-50.	H0583: 2	
HYAAAI55	674591	6823	19 - 141	16575		L0748: 2, S0114: 1 and H0583: 1.	
HYAAAI67	706512	6824	233 - 3	16576	His-2 to Trp-7, Gln-37 to Asn-43.	H0583: 1 and H0305: 1.	
HYAAAT36	744792	6825	1 - 414	16577	Ala-1 to Gly-6.	H0583: 1, H0521: 1, L0779: 1 and L0758: 1.	
HYAAAJ89	678728	6826	137 - 283	16578		H0583: 1 and H0179: 1.	
HYAAN31	697590	6827	2 - 181	16579	Gly-20 to Trp-33.	H0583: 2	
HYAAO39	599000	6828	242 - 412	16580		H0583: 1 and S0002: 1.	
HYAAR17	662426	6829	2 - 223	16581		H0583: 2	
HYAAR95	862585	6830	252 - 336	16582	Ile-20 to Lys-25.	H0583: 1, S0002: 1, L0766: 1 and H0423: 1.	
HYAAS08	926017	6831	1 - 312	16583	Arg-1 to Phe-18, Pro-38 to Phe-43.	H0583: 1 and H0341: 1.	
HYAAT50	724047	6832	42 - 413	16584	Ile-3 to Ala-11, Arg-25 to Leu-32, Ser-40 to Cys-47, Leu-101 to Lys-111.	S0134: 1 and H0583: 1.	
HYAAU42	890595	6833	2 - 424	16585	Ser-37 to His-43, Val-45 to Trp-60, Lys-106 to Ser-113.	H0583: 1, L0539: 1 and H0271: 1.	
HYAAU88	786666	6834	125 - 430	16586	His-1 to Gln-8, Asp-14 to Cys-21.	S0218: 1, H0583: 1 and S0216: 1.	
HYAAX05	934878	6835	23 - 190	16587		H0583: 2	
HYAAX17	662439	6836	3 - 140	16588		H0583: 2	

HYAAX65	630213	6837	2 - 217	16589	Gly-1 to Trp-13. Pro-1 to His-11, Ser-52 to Ala-60.	H0583: 2 H0556: 6, S0144: 5, H0255: 22q13.1 4, L0766: 4, L0757: 4, H0650: 3, S0278: 3, H0486: 3, S0344: 3, S0426: 3, L0655: 3, L0747: 3, L0749: 3, H0543: 3, S0134: 2, L0785: 2, H0069: 2, H0318: 2, H0179: 2, L0748: 2, L0756: 2, T0002: 1, H0583: 1, S0116: 1, H0402: 1, H0638: 1, S0358: 1, S0140: 1, H0025: 1, H0575: 1, H0581: 1, H0510: 1, H0271: 1, H0063: 1, H0087: 1, L0381: 1, L0378: 1, L0657: 1, L0659: 1, L0542: 1, L0383: 1, H0521: 1, H0436: 1, S0027: 1, L0744: 1, L0779: 1, L0731: 1, H0445: 1, L0601: 1, H0422: 1 and H0677: 1.	103050, 103050, 124030, 124030, 138981, 182380, 188826, 190040, 190040, 190040
HYABB23	675659	6839	302 - 448	16591		L0754: 3, L0803: 2, L0517: 2, L0362: 2, H0583: 1, L0773: 1, L0662: 1, H0521: 1 and L0780: 1.	129490, 167415, 176947
HYABB40	799572	6840	288 - 545	16592	Phe-20 to Ser-29.	L0766: 2, L0747: 2, L0779: 2, L0777: 2, L0755: 2, H0583: 1, S0116: 1, L0800: 1, L0644: 1, L0626: 1, L0375: 1, L0776: 1, L0792: 1, L0663: 1, L0748: 1, L0758: 1, L0593: 1 and H0423: 1.	
HYABB96	692653	6841	3 - 170	16593	Ser-1 to Cys-14, Arg-20 to Lys-31, Leu-34 to Thr-46.	H0583: 1 and H0521: 1.	8



HYABC02	919212	6842	3 - 179	16594	Tyr-1 to Thr-10, Thr-15 to Cys-21, Gln-29 to Trp-34.	H0583: 2	
HYABC58	924677	6843	92 - 202	16595	Asn-1 to Tyr-9.	H0583: 1 and H0063: 1.	
HYABE67	822985	6844	94 - 315	16596	Arg-11 to His-21, Tyr-46 to Gly-54.	H0583: 3 and L0754: 1.	
HYABE85	697593	6845	447 - 635	16597		H0583: 2, L0764: 1 and L0439: 1.	
HYABG22	811950	6846	3 - 146	16598		H0583: 2	
HYABL55	678864	6847	2 - 418	16599	Thr-12 to Thr-28, Glu-30 to Ala-36, Gly-40 to Arg-48, Ala-61 to Trp-75, Arg-94 to Gln-101, Thr-112 to Asp-117.	H0583: 1 and S0052: 1.	
HYABP53	971448	6848	26 - 637	16600	His-1 to Gly-12, His-33 to Gly-44, Thr-124 to Gly-137, Thr-153 to Thr-158, Arg-188 to Gly-193.	AR054: 47, AR051: 42, AR050: 39, AR089: 1, AR061: 1 H0583: 1 and H0656: 1.	
HYABV14	956236	6849	121 - 588	16601	His-1 to Trp-12, Arg-40 to Ala-45, Pro-50 to His-60, Asn-70 to Arg-76.	H0521: 4, L0766: 3, H0583: 1, H0581: 1, H0522: 1 and H0543: 1.	
HYACG89	724923	6850	231 - 512	16602		S0114: 1, L0002: 1 and H0583: 1.	
HYACI15	674268	6851	149 - 277	16603	Ser-21 to Gly-26.	H0583: 1 and H0576: 1.	
HYACI18	665720	6852	122 - 292	16604	His-25 to Lys-32.	H0583: 1, S0002: 1 and L0748: 1.	
HYACI64	929756	6853	299 - 523	16605	Ser-28 to Pro-33.	H0583: 1 and H0423: 1.	
HYACI95	746317	6854	3 - 284	16606	Gly-1 to His-10, Pro-13 to Arg-21, His-39 to Cys-53, Ser-79 to Lys-92.	H0583: 2	
HYACI53	727948	6855	214 - 375	16607	Gln-1 to Ser-6.	L0748: 4 and H0583: 1.	
HYACF71	760102	6856	275 - 565	16608	Pro-27 to Arg-38.	L0439: 2 and H0583: 1.	

HYACE11	966482	6857	74 - 229	16609	Gly-1 to Gly-7, Gln-36 to Leu-45.	H0583: 1 and L0517: 1.	
HYACD06	974495	6858	145 - 384	16610	Leu-10 to Tyr-28, Arg-39 to Lys-44.	H0583: 1	
HYACC03	923325	6859	199 - 462	16611	Pro-24 to Ser-29, Ser-45 to Gln-50.	H0583: 1 and L0589: 1.	
HYABB43	800006	6860	368 - 21	16612	Lys-16 to Arg-21, Ser-44 to Arg-52.	AR050: 136, AR054: 109, AR051: 95, AR089: 1, AR061: 1 L0805: 2, H0583: 1, L0764: 1, L0375: 1, L0776: 1, L0740: 1, L0731: 1 and L0759: 1.	
HYAAV57	734463	6861	347 - 430	16613		H0583: 1 and L0439: 1.	
HYAAV45	717479	6862	360 - 542	16614	Ala-18 to Glu-26.	H0583: 1 and L0749: 1.	
HYAAU65	909956	6863	2 - 580	16615	Gln-68 to Ser-78, Thr-93 to Ser-101, Pro-119 to Ala-130.	AR089: 2, AR061: 1 L0748: 2 and H0583: 1.	
HYAAT55	731420	6864	3 - 233	16616		H0583: 1 and L0748: 1.	
HYAAT39	929758	6865	392 - 186	16617		L0754: 2 and H0583: 1.	
HYAAN84	782838	6866	164 - 364	16618	Ser-30 to Arg-39.	H0583: 1, L0759: 1 and L0589: 1.	
HYAAL49	973089	6867	115 - 300	16619	Val-13 to Gln-19, His-35 to Gly-42.	H0583: 1	
HYAAL41	887395	6868	3 - 257	16620		AR050: 73, AR054: 55, AR051: 52 H0583: 1	
HYAAL19	668138	6869	517 - 738	16621	Met-15 to Asn-21, Ser-36 to Ser-41.	L0439: 4, L0756: 2, L0594: 2, H0583: 1, L0766: 1, L0438: 1, L0779: 1 and L0758: 1.	
HYAAK77	887044	6870	212 - 727	16622		AR054: 69, AR050: 62, AR051: 57 H0583: 1 and L0745: 1.	
HYAAK74	765252	6871	1 - 177	16623	Cys-1 to Arg-12.	H0583: 1, L0748: 1 and L0749: 1.	

HYAA103	923526	6872	148 - 279	16624	Glu-26 to Cys-31.	H0583: 1 and L0777: 1.	
HYAA178	773433	6873	1 - 219	16625	Arg-17 to Asn-23, Ser-43 to Ile-48.	H0583: 1, L0748: 1 and L0754: 1.	
HYAAD24	677019	6874	2 - 157	16626		H0583: 1 and L0748: 1.	
HYAAC24	677010	6875	186 - 389	16627	Glu-21 to Tyr-31, Lys-58 to Lys-64.	H0583: 1 and L0362: 1.	
HYAAB40	841969	6876	268 - 510	16628	Ile-15 to Ser-20.	H0583: 1 and L0717: 1.	
HWWEW11	965434	6877	298 - 471	16629	Gly-1 to Gly-29.	H0657: 1 and L0664: 1.	
HWWEEL1	965426	6878	204 - 374	16630	Ser-1 to Leu-8.	H0657: 1 and L0367: 1.	
HWWE06	933690	6879	85 - 234	16631	Ser-33 to Gly-43.	L0766: 2, H0657: 1 and L0749: 1.	
HWBGG82	779081	6880	377 - 538	16632		H0580: 1, L0745: 1 and L0600: 1.	
HWBGF04	927284	6881	1 - 489	16633		H0580: 1 and L0750: 1.	
HWBFY46	800638	6882	1 - 270	16634	Arg-5 to Arg-14.	AR054: 2, AR050: 2, AR051: 1 H0580: 1	
HWBEG18	909798	6883	55 - 696	16635	Trp-46 to Lys-51, Pro-109 to Asn-123, Phe-156 to Gly-165.	AR089: 82, AR061: 18 H0580: 1	
HWBEF69	754328	6884	324 - 229	16636		H0580: 1 and L0748: 1.	
HWBEE25	677660	6885	534 - 316	16637		H0580: 1 and L0742: 1.	
HWBEA06	934820	6886	31 - 237	16638	Gln-26 to Ser-31, Pro-34 to Gln-40.	H0580: 1 and L0766: 1.	
HWBDU71	835888	6887	418 - 531	16639		H0580: 1 and L0523: 1.	
HWBDU58	735774	6888	490 - 257	16640	Ser-18 to Asn-23, Thr-30 to Thr-41, Pro-63 to Arg-75.	L0439: 3 and H0580: 1.	
HWBDS59	743462	6889	274 - 447	16641	Pro-11 to Thr-20.	L0749: 2, H0580: 1 and L0747: 1.	22q11.2-qter
HWBDS12	971872	6890	3 - 200	16642	Ile-17 to Gln-37.	H0580: 1, L0775: 1 and L0755: 1.	
HWBDR82	779002	6891	153 - 437	16643	Phe-1 to Arg-13, Ser-21 to Gln-32.	H0580: 1 and L0748: 1.	
HWBDQ58	735769	6892	553 - 744	16644		L0748: 2 and H0580: 1.	
HWBDL82	728805	6893	26 - 355	16645	Pro-64 to Ile-75.	L0439: 2 and H0580: 1.	



HWBBI.57	868349	6909	204 - 428	16661					
HWBBI.03	923691	6910	50 - 217	16662	Asn-32 to Thr-39, Gly-46 to Phe-56.			H0580: 1 and L0763: 1.	
								H0580: 1, L0369: 1 and L0517: 1.	
HWBBF60	740125	6911	3 - 257	16663				H0580: 1 and L0754: 1.	
HWBBE52	868358	6912	150 - 365	16664	Arg-19 to Asn-33, Leu-52 to Tyr-66.			AR054: 7, AR051: 4, AR050: 2	
								L0748: 2, H0580: 1, L0772: 1, L0771: 1, L0774: 1, L0776: 1 and L0758: 1.	
HWBBD23	675360	6913	1 - 276	16665	Arg-1 to Gly-8			H0580: 1 and L0602: 1.	
HWBAX77	771958	6914	126 - 521	16666	Gly-7 to Leu-12, Ser-60 to Cys-66.			H0580: 1 and L0754: 1.	
HWBAT83	780976	6915	1 - 426	16667				H0580: 1 and L0745: 1.	
HWBAS96	796126	6916	1 - 186	16668	Ser-18 to Thr-23.			H0580: 1 and L0748: 1.	
HWBAR29	690422	6917	51 - 302	16669	Lys-15 to Ala-23, Ala-26 to Leu-34, Gly-46 to Cys-56.			H0580: 1 and L0740: 1.	
HWBAQ71	944080	6918	3 - 470	16670	Thr-1 to Ala-11, Thr-24 to Arg-29.			AR089: 3, AR061: 1	
HWBAQ02	919351	6919	102 - 311	16671	Cys-5 to Gly-13, Asn-24 to Arg-29.			H0580: 1 and L0601: 1. L0779: 2 and H0580: 1.	
HWBAO50	724135	6920	202 - 402	16672	Leu-39 to Thr-44.			L0766: 2 and H0580: 1.	
HWBAO38	709490	6921	195 - 368	16673				L0748: 2 and H0580: 1.	
HWBAK65	747731	6922	277 - 140	16674	Thr-12 to Gly-19.			L0439: 3 and H0580: 1.	
HWBAJ13	975117	6923	1649 - 1440	16675				AR061: 2, AR089: 2 H0580: 1	
HWBAH72	766073	6924	227 - 469	16676				L0439: 2 and H0580: 1.	
HWBAH16	661664	6925	3 - 269	16677	Gln-9 to Asn-14.			H0580: 1, L0748: 1 and L0749: 1.	
HWBAF43	715111	6926	329 - 550	16678	Ser-27 to Arg-33, Thr-61 to Pro-67.			H0580: 1 and L0748: 1.	
HWBAF09	625401	6927	108 - 278	16679				H0580: 1 and L0766: 1.	
HWBAC02	919559	6928	1 - 135	16680	Gln-5 to Asp-21.			H0580: 1 and L0731: 1.	
HWAGV04	926759	6929	69 - 371	16681	Gly-3 to Cys-10, Leu-29 to His-34.			H0581: 1 and L0589: 1.	
HWAGQ02	953013	6930	550 - 185	16682	Cys-31 to Tyr-37.			L0766: 3, L0748: 2, L0785:	

					Lys-90 to Ser-99, Ser-102 to His-109, Gln-112 to Trp-121.			1, H0581: 1, L0763: 1, L0774: 1, L0775: 1, L0375: 1, L0806: 1, L0776: 1, L0749: 1, L0779: 1, L0752: 1, L0758: 1 and L0599: 1.	
HWAGO42	958373	6931	1 - 489	16683	Pro-24 to Val-31.			H0581: 1 and L0800: 1.	
HWAFQ10	961339	6932	733 - 930	16684				L0766: 2 and H0581: 1.	
HWAFM60	868436	6933	1 - 315	16685	Asp-7 to Asn-17, Arg-40 to His-47, Pro-80 to Cys-91.			H0581: 1 and L0766: 1.	
HWAFG12	969605	6934	70 - 417	16686	Ala-1 to Gly-10, Arg-33 to Thr-39, Phe-41 to Gly-50, Asp-59 to Gly-66, Arg-73 to Ser-80.			H0581: 1 and L0655: 1.	
HWAFB87	949950	6935	121 - 420	16687	Gly-7 to Asp-12, Glu-31 to Ser-43, Val-76 to Ser-86.			AR089: 1, AR061: 1 H0581: 1	
HWAFD56	868452	6936	98 - 217	16688	Asp-8 to Cys-15.			H0581: 1 and L0758: 1.	
HWAFD10	963323	6937	3 - 131	16689				H0581: 1 and L0662: 1.	
HWAF47	948858	6938	110 - 358	16690	Ser-16 to Ile-22.			AR089: 4, AR061: 1 H0581: 1	
HWAF405	930990	6939	290 - 544	16691	Gln-1 to Arg-11, Pro-33 to Arg-41, Thr-46 to Gly-52, Arg-54 to Cys-75.			L0751: 2, H0581: 1, L0794: 1 and L0752: 1.	
HWAEZ81	868460	6940	496 - 257	16692	Gln-1 to Lys-8.			H0581: 1	
HWAEZ19	874351	6941	121 - 519	16693	Ser-1 to Ile-7, Phe-27 to Lys-44.			H0581: 1	
HWAEU35	887166	6942	1 - 474	16694	Arg-22 to Arg-36.			AR051: 268, AR054: 153, AR050: 68, AR089: 54, AR061: 9 H0581: 1	
HWAE10	838763	6943	102 - 275	16695	Glu-52 to Lys-58.			H0581: 1 and L0766: 1.	
HWAE25	951965	6944	2 - 793	16696	Asn-11 to His-19, Gly-31 to Val-37.			H0581: 1 and L0593: 1.	

HWAEK27	868494	6945	357 - 578		Thr-65 to Ser-74, Lys-177 to Thr-182, Gly-187 to Asp-199.		
HWAEQ71	931547	6946	2 - 553	16697	Asn-1 to Lys-6, Gly-18 to Glu-28, Ser-53 to Thr-58.	H0581: 1 and L0589: 1.	
HWAEQ08	958115	6947	3 - 716	16698	Gln-60 to Ala-68, Trp-132 to Ser-138, Lys-156 to Val-163.	AR089: 6, AR061: 1 L0740: 2 and H0581: 1.	
HWADQ35	868526	6948	824 - 630	16699	Leu-32 to Pro-38, Leu-124 to Ala-135.	AR061: 0, AR089: 0 H0581: 1, L0803: 1, L0664: 1, L0439: 1 and L0751: 1.	
HWAD027	682458	6949	222 - 380	16700		L0759: 4, H0581: 1, L0055: 1, L0773: 1 and L0777: 1.	
HWADN42	713272	6950	188 - 391	16701	Lys-45 to Ser-53.	H0581: 1, L0748: 1 and L0754: 1.	
HWADM84	782685	6951	209 - 373	16702	Ser-10 to Glu-18.	H0581: 1, L0661: 1 and L0750: 1.	
HWADI46	891149	6952	2 - 265	16703	Gly-31 to Lys-43.	H0581: 1 and L0439: 1.	
HWAD25	677594	6953	314 - 427	16704		AR050: 65, AR054: 52, AR051: 41 H0581: 1	
HWADD18	665173	6954	83 - 349	16705		L0748: 2 and H0581: 1.	
				16706		L0794: 2, L0665: 2, H0581: 1, L0438: 1, L0439: 1, L0749: 1, L0757: 1 and L0758: 1.	
HWACZ56	733002	6955	3 - 326	16707		H0581: 1 and L0596: 1.	
HWACY70	756888	6956	190 - 552	16708	Glu-1 to Lys-31, Ser-36 to Arg-61.	AR089: 6, AR061: 2 H0581: 1 and L0608: 1.	
HWACS69	774914	6957	391 - 552	16709		H0581: 1 and L0731: 1.	
HWACQ54	729166	6958	80 - 208	16710		H0581: 1 and L0745: 1.	
HWACJ56	733013	6959	205 - 414	16711	Pro-16 to Ile-23.	H0581: 1 and L0748: 1.	
HWACI46	718711	6960	383 - 538	16712		H0581: 1, L0748: 1 and L0581: 1.	
HWACH03	923374	6961	177 - 350	16713	Gly-41 to Ser-46.	H0581: 1, L0748: 1 and	

HWACD30	691565	6962	34 - 249	16714	Pro-5 to Arg-19.	L0749: 1.		
HWABY68	927387	6963	2 - 382	16715		L0747: 3 and H0581: 1. L0777: 2 and H0581: 1.	19q13.3	113900, 126340, 126391, 130410, 134790, 138570, 160900, 173850, 258501, 600040, 602225, 602225
HWABY67	751409	6964	145 - 294	16716				
HWABY34	868535	6965	107 - 280	16717				
HWABP20	669486	6966	160 - 384	16718	Lys-21 to Arg-27, Ala-29 to Ala-35.	H0581: 1 and L0747: 1. L0748: 2 and H0581: 1.		
HWABP19	951277	6967	33 - 254	16719		H0581: 1 and L0764: 1.		
HWABP02	919442	6968	322 - 423	16720		L0766: 2, H0581: 1 and L0746: 1.		
HWABH13	656767	6969	360 - 602	16721		L0766: 2 and H0581: 1.		
HWABH68	929275	6970	3 - 212	16722		H0581: 1 and L0646: 1.		
HWABG11	949088	6971	1 - 486	16723	Phe-13 to Ile-19.	AR089: 8, AR061: 2 H0581: 1		
HWABD52	726510	6972	4 - 207	16724		L0777: 2 and H0581: 1.		
HWAAAY79	791452	6973	45 - 329	16725	Thr-32 to His-38, Thr-46 to Asn-55.	H0581: 1 and L0598: 1.		
HWAAAY51	973237	6974	48 - 185	16726		H0581: 1		
HWAAAX48	721442	6975	144 - 377	16727	Arg-18 to Asn-26, Pro-10 to Ser-22, Gly-57 to Cys-62.	H0581: 1, L0805: 1, L0776: 1, L0791: 1, L0663: 1 and L0439: 1.		
HWAAW65	779578	6976	594 - 809	16728	Gly-1 to Arg-14, Leu-32 to Gly-37, Pro-41 to Gly-46.	H0581: 1 and L0748: 1.		
HWAAQ76	887772	6977	3 - 590	16729	His-3 to Ile-9, Leu-13 to Leu-20, Ala-47 to Ser-54, Asn-86 to Pro-93.	AR050: 94, AR051: 77, AR054: 68 L0758: 2, H0581: 1 and L0779: 1.		
HWAAAM30	691878	6978	106 - 336	16730	Asn-36 to Glu-42, Pro-53 to Asp-58.	H0581: 1 and L0731: 1.		
HWAAAL70	757035	6979	3 - 443	16731		H0581: 1 and L0741: 1.		



HWAAI41	712141	6980	117 - 383	16732	Arg-18 to Phe-32.	H0581: 1 and L0748: 1.	
HWAAI60	751037	6981	2 - 226	16733		H0581: 1 and L0759: 1.	
HWAAE31	841973	6982	105 - 248	16734	Arg-1 to Phe-9, Arg-23 to Gly-31.	H0581: 1, L0766: 1 and L0599: 1.	
HWAAAB06	935131	6983	181 - 429	16735	Ser-4 to Ala-12, His-21 to Leu-27, Pro-30 to Glu-35.	L0452: 1 and H0581: 1.	
HUUDR34	944903	6984	2 - 658	16736	Lys-6 to Met-14, Lys-60 to Leu-65, Asp-71 to Lys-76, Arg-78 to Ser-88, Pro-96 to His-101, Glu-109 to Glu-123, Thr-138 to Ala-144, Arg-173 to Asp-180.	L0462: 2, H0656: 1 and L0617: 1.	103050, 103050, 124030, 124030, 138981, 182380, 188826, 190040, 190040, 190040
HUUCS12	969325	6985	403 - 687	16737	Ser-6 to Pro-13.	L0748: 3 and H0656: 1.	
HUUCJ02	940813	6986	594 - 121	16738	Gly-11 to Ile-17, Gln-57 to Gly-64.	H0656: 1 and L0163: 1.	
HUJDJ03	972441	6987	189 - 578	16739	Arg-54 to Ser-61, Pro-79 to Ser-90.	L0523: 2 and H0650: 1.	
HUIDE05	967231	6988	21 - 569	16740	Lys-2 to Ile-11, Asp-76 to Gly-83.	H0650: 1 and L0758: 1.	5q31.1 131400, 147061, 147575, 147575, 147575, 153455, 159000, 181460, 600807, 601596, 602089
HUIGN12	969331	6989	316 - 465	16741		H0650: 1 and L0142: 1.	
HUIBQ04	926196	6990	1 - 120	16742		H0650: 1	
HUIBP01	914512	6991	1 - 330	16743		H0650: 1	
HTYSK04	501001	6992	19 - 285	16744	Arg-28 to Gly-36, Pro-73 to Tyr-80.	H0116: 1	
HTYSK65	500999	6993	126 - 338	16745	His-45 to Tyr-50.	H0116: 1	
HTYSK23	575458	6994	112 - 258	16746		H0116: 1	
HTYND11	965061	6995	93 - 311	16747		L0748: 1 and S0432: 1.	
HTYNC04	976906	6996	167 - 66	16748	Leu-16 to Asn-31.	L0021: 1, L0779: 1 and S0452: 1.	

HTXAA83	537277	6997	424 - 185	16749	Ala-4 to Gly-13.	H0058: 1	
HTXSV06	933377	6998	267 - 461	16750	Glu-20 to Glu-26.	H0556: 1 and L0367: 1.	
HTXSH08	957886	6999	266 - 463	16751		L0749: 4, L0748: 2, L0777: 2, H0556: 1 and L0471: 1.	
HTXSC11	965536	7000	168 - 416	16752	Lys-28 to Met-34, Glu-40 to Ile-45.	H0556: 1	
HTXSA04	926338	7001	174 - 413	16753		H0556: 1, L0783: 1 and L0809: 1.	
HTXBS08	957919	7002	1 - 183	16754	Pro-8 to Arg-19.	H0556: 1 and L0366: 1.	
HTXSA02	918089	7003	2 - 205	16755	Pro-7 to Gly-17.	H0556: 1, L0748: 1 and L0780: 1.	
HTXQS11	965084	7004	1 - 447	16756	Val-20 to Ser-37, Asp-110 to Arg-125.	H0556: 1, L0643: 1 and L0749: 1.	
HTXQO07	952064	7005	1 - 231	16757		H0556: 1 and L0749: 1.	
HTXQM71	869147	7006	192 - 425	16758	Leu-50 to Ile-55.	H0556: 1 and L0766: 1.	
HTXQM07	952067	7007	311 - 445	16759		H0556: 1 and L0805: 1.	
HTXPX72	916162	7008	132 - 458	16760		H0556: 1 and L0748: 1.	
HTXPV03	922905	7009	416 - 664	16761		H0556: 1 and L0745: 1.	
HTXOR95	869249	7010	380 - 592	16762		H0556: 1 and L0748: 1.	
HTXOO15	869261	7011	55 - 273	16763	Pro-49 to Thr-55.	AR089: 1, AR061: 0	
HTXOO12	872368	7012	30 - 395	16764		H0556: 1 and L0752: 1.	
HTXOK51	869265	7013	147 - 527	16765	Ser-76 to Gly-82, Gly-89 to Thr-97.	H0556: 1 and L0761: 1.	12
HTXNJ60	869299	7014	354 - 677	16766	Pro-42 to Arg-47.	H0556: 1 and L0766: 1.	
HTXNG04	926992	7015	48 - 557	16767	Pro-20 to Ala-25, Lys-53 to Arg-63, Pro-80 to Gly-89, Ser-139 to Asp-156.	L0749: 5, L0748: 3 and H0556: 1.	
HTXNFI1	869300	7016	309 - 593	16768		H0556: 1 and L0748: 1.	
HTXNA19	953848	7017	562 - 792	16769		H0556: 1 and L0439: 1.	
HTXMM01	915250	7018	107 - 223	16770		H0556: 1 and L0562: 1.	
HTXMM37	948611	7019	1 - 204	16771		L0748: 2 and H0556: 1.	
HTXMR30	869312	7020	332 - 577	16772		L0758: 2 and H0556: 1.	
HTXMM82	841875	7021	2 - 424	16773	Arg-15 to Ser-22.	H0556: 1 and L0596: 1.	

HTXMC72	875290	7022			Ala-30 to Leu-37, Pro-44 to Lys-51, Leu-53 to Arg-65, Pro-123 to Trp-132.			
HTXLS08	958357	7023	127 - 399 1 - 1152	16774 16775	Asp-1 to Gly-8, Leu-14 to Ser-20.		H0556: 1 and L0748: 1. L0766: 9, L0761: 8, L0779: 3, L0809: 2, L0752: 2, H0556: 1, L0772: 1, L0794: 1 and L0745: 1.	
HTXLN70	756630	7024	409 - 663	16776			H0556: 1 and L0748: 1.	
HTXLI10	963602	7025	235 - 471	16777			H0556: 1 and L0794: 1.	
HTXKP30	487401 494070	7026 9612	138 - 335 164 - 3	16778 19364			H0556: 1	
HTXKN65	869345	7027	71 - 241	16779	Asp-13 to Phe-19, Arg-46 to Leu-54.		H0556: 1 and L0369: 1.	
HTXKM37	869347	7028	24 - 236	16780	Met-1 to Asn-8, Gln-19 to Ser-24.		H0556: 1 and L0768: 1.	
HTXKM24	677101	7029	117 - 284	16781	Lys-8 to Pro-19.		H0556: 1 and L0748: 1.	
HTXKK96	796330	7030	321 - 515	16782	Gly-51 to Pro-65.		H0556: 1 and L0596: 1.	
HTXKK31	697838	7031	208 - 447	16783	Ser-74 to Ile-80.		H0556: 1 and L0756: 1.	
HTXKF02	919683	7032	3 - 251	16784	Leu-2 to Ser-14, Ser-26 to Ala-34, Pro-43 to Gly-49.		H0556: 1, L0743: 1 and L0744: 1.	125852, 126452, 126452, 141900, 141900, 141900, 141900, 141900, 141900, 142000, 142000, 142200, 142250, 142270, 176730, 176730, 176730, 190020, 191290, 192500, 192500, 194071, 194071, 204500, 600856, 601680, 602631, 602631
HTXKC64	746471	7033	203 - 481	16785	Ile-9 to Asn-18.		H0556: 1 and L0748: 1.	
HTXJX77	870446	7034	94 - 606	16786	Gln-25 to Thr-30.		H0556: 1 and L0596: 1.	

HTXJR61	741746	7035	941 - 693	16787	Ser-45 to Lys-54, Lys-1 to Leu-6.	L0439: 3, H0556: 1 and L0747: 1.	
HTXJP17	663123	7036	77 - 334	16788	Arg-24 to Gly-32, Asp-48 to Ser-55, Pro-58 to Gln-64, Glu-69 to His-86.	L0747: 3, L0758: 2, H0556: 1 and L0515: 1.	
HTXJO80	871594	7037	329 - 454	16789		L0748: 2, H0556: 1, L0637: 1 and L0749: 1.	
HTXJO78	773508	7038	145 - 282	16790	Leu-7 to Gly-18, Trp-20 to Asn-29.	H0556: 1 and L0755: 1.	
HTXJN39	566290	7039	25 - 240	16791	Ala-4 to Gln-9, Asp-31 to Ser-36, Asp-44 to Gln-53.	AR054: 19, AR050: 2, AR051: 1 H0556: 1 and L0592: 1.	
HTXJK20	423763	7040	122 - 349	16792	Lys-1 to Arg-14, Thr-38 to Cys-50.	H0556: 1 and L0591: 1.	
HTXJC08	957757	7041	737 - 450	16793		AR054: 16, AR050: 10, AR051: 2 H0556: 1	
	972481	9613	410 - 727	19365	Gly-23 to Arg-29, Gly-33 to Ser-42, His-51 to Thr-56, Pro-67 to Ser-79, Ser-84 to Arg-91, Pro-100 to Gly-106.		
HTXJA76	767696	7042	222 - 386	16794	Ser-6 to Thr-12.	H0556: 1	
HTXJA32	699152	7043	54 - 344	16795	Ser-2 to Met-7, Pro-18 to Pro-25.	L0599: 2 and H0556: 1.	
HTXGH41	712566	7044	4 - 246	16796	Pro-3 to Gln-8, Val-35 to Asp-40.	H0265: 1 and L0749: 1.	
HTXGE85	783418	7045	1 - 462	16797		L0743: 3, L0744: 2 and H0265: 1.	
HTXFR89	790276	7046	2 - 292	16798	Arg-4 to Cys-16, Pro-18 to Pro-38, Asn-86 to Lys-92.	H0265: 1 and L0750: 1.	
HTXFN90	537392	7047	87 - 374	16799	Gly-26 to Leu-31,	H0265: 1	

HTXFN73	824543	7048	82 - 285	16800	Gln-35 to Gly-41.	H0265: 1
HTXFN63	745316	7049	96 - 308	16801		H0265: 1
HTXFN53	537391	7050	42 - 305	16802		H0265: 1
HTXFN23	537393	7051	37 - 207	16803		H0265: 1
HTXPH43	537397	7052	28 - 240	16804	Pro-7 to Asn-13, Pro-19 to Tyr-26, Arg-48 to Phe-55.	H0265: 1
HTXPH20	537398	7053	17 - 217	16805	Lys-11 to Cys-21, Thr-41 to Pro-47, Arg-55 to Thr-60.	H0265: 1
HTXFG29	689833	7054	79 - 210	16806		H0265: 1
HTXFF96	796109	7055	543 - 379	16807	Tyr-8 to Ala-13, Gly-22 to Ser-28, Met-38 to Pro-45.	H0265: 1
	796314	9614	133 - 321	19366	Lys-7 to Gly-14, His-16 to Asp-22.	
HTXFF93	934438	7056	370 - 558	16808	Arg-6 to Ser-11, Val-36 to Ser-43.	H0265: 1 and L0748: 1.
HTXEY18	869406	7057	132 - 392	16809	Pro-28 to Gly-34.	H0265: 1
HTXEX83	780277	7058	1 - 342	16810		H0265: 1 and L0748: 1.
HTXEE90	789161	7059	120 - 368	16811	Ser-8 to Tyr-19, Glu-75 to Pro-83.	L0740: 2 and H0265: 1.
HTXEC96	796561	7060	260 - 132	16812		H0265: 1 and L0748: 1.
HTXEA45	723401	7061	2 - 301	16813	Pro-2 to Ser-11, Arg-36 to Ser-51.	H0265: 1 and L0596: 1.
HTXDZ56	733641	7062	135 - 424	16814	Tyr-39 to Tyr-45.	L0748: 2 and H0265: 1.
HTXDW32	699559	7063	810 - 1070	16815	Ser-58 to Ile-66.	H0265: 1 and L0749: 1.
HTXDI77	772473	7064	2 - 202	16816	Thr-13 to Thr-19.	H0265: 1 and L0750: 1.
HTXDD24	888612	7065	1 - 276	16817		AR034: 15, AR050: 4, AR051: 3 H0265: 1
HTXCW50	724650	7066	3 - 422	16818	Glu-1 to Asp-9, Lys-29 to Lys-46.	L0809: 4, L0803: 2, L0777: 2, H0265: 1, L0774: 1, L0651: 1, L0749: 1 and L0780: 1.

HTXCS84	783262	7067	5 - 82	16819	Glu-18 to Ala-24.	H0265: 1	
HTXBT88	529663	7068	17 - 286	16820	Val-1 to Ser-12, Gly-14 to Thr-22, Arg-63 to Ala-71.	H0265: 1	
HTXAW03	921906	7069	92 - 376	16821		H0265: 1, L0769: 1, L0509: 1, L0439: 1, L0747: 1 and L0755: 1.	
HTXAK96	796612	7070	360 - 485	16822	Lys-1 to Trp-8.	H0265: 1 and L0748: 1.	
HTXAJ34	707050	7071	196 - 318	16823	Tyr-13 to Phe-18.	H0265: 1 and L0754: 1.	
HTWL177	839177	7072	1 - 411	16824	Pro-30 to Pro-38.	H0576: 1	
HTWLF58	809478	7073	131 - 433	16825	Pro-51 to Gly-58.	L0766: 1, H0576: 1 and L0779: 1.	
HTWLD61	741610	7074	3 - 218	16826	Ala-6 to Met-16, Pro-39 to Lys-45.	H0576: 1	
HTWLD10	964195	7075	85 - 189	16827		L0803: 1 and H0576: 1.	
HTWLC51	725533	7076	94 - 201	16828		L0748: 2, L0766: 1, H0576: 1 and L0779: 1.	
HTWKZ86	785318	7077	121 - 279	16829	Lys-15 to Ser-20, Glu-28 to Trp-36, Lys-38 to Lys-49.	H0576: 1	
HTWKZ46	718872	7078	160 - 354	16830	Ala-50 to Asn-63.	H0576: 1	
HTWKZ35	494833	7079	2 - 127	16831		H0576: 1	
HTWKZ28	686254	7080	177 - 395	16832	Ser-1 to Val-10, Glu-20 to Ser-29, Pro-54 to Cys-67.	H0576: 1	
HTWKZ27	812689	7081	142 - 303	16833		H0576: 1	
HTWKZ15	659934	7082	233 - 367	16834	Leu-7 to Leu-13, Pro-15 to Cys-20.	H0576: 1	
HTWK141	712142	7083	25 - 189	16835	Trp-14 to Ser-25.	L0766: 1, H0576: 1 and L0754: 1.	
HTWKF34	703863	7084	174 - 320	16836	Asp-25 to Lys-30.	L0748: 2 and H0576: 1.	
HTWK807	952841	7085	91 - 321	16837	Pro-27 to Ser-36.	L0763: 1 and H0576: 1.	
HTWY136	708338	7086	12 - 251	16838	Gly-73 to Leu-80.	L0761: 2, L0754: 2, L0766: 14q32.1 1, H0576: 1, L0779: 1, L0780: 1 and L0755: 1.	107280, 107280, 107400, 107400, 122500, 186960, 245200, 601841

HTWJH08	790185	7087	85 - 207	16839	Gly-3 to Cys-12, Lys-33 to Lys-41.	AR061: 1, AR089: 1 H0576: 1	
	846554	9615	85 - 207	19367	Gly-3 to Cys-12, Lys-33 to Lys-41.		
HTWJF89	805706	7088	45 - 323	16840	Glu-1 to Ser-9, Ser-30 to Ala-36, Gln-61 to Tyr-66.	H0576: 1 and L0748: 1.	
	911448	7089	916 - 1434	16841	Thr-12 to Trp-20, Pro-29 to Arg-35, Leu-51 to Arg-58, Arg-100 to Arg-108, Cys-120 to Arg-125, Pro-150 to Arg-163.		
HTWJF50					Leu-38 to Lys-43, Ser-52 to Cys-58.	L0766: 1 and H0576: 1.	
	559919	7090	2 - 226	16842			
HTWJA79	586124	7091	2 - 196	16843		H0576: 1	
HTWFM90	582285	7092	59 - 187	16844	Leu-16 to Ser-29.	AR054: 180, AR050: 146, AR051: 125, AR089: 10, AR061: 4 H0436: 1	
HTWFM89	786805	7093	110 - 301	16845	Gly-1 to Tyr-13, Arg-26 to Lys-39.	H0436: 1	
HTWFM79	841983	7094	19 - 186	16846	Ser-43 to Tyr-49.	L0766: 1 and H0436: 1.	
HTWFM71	760303	7095	18 - 242	16847	Leu-7 to Leu-14, Pro-16 to Glu-23, Thr-36 to Glu-51.	H0436: 1	
HTWFM48	721587	7096	1 - 114	16848	Val-14 to Leu-27.	H0436: 1	
HTWEJ71	869491	7097	346 - 609	16849	Gly-38 to Glu-48.	L0770: 1 and H0436: 1.	
HTWFFH75	767251	7098	352 - 498	16850		H0436: 1 and L07748: 1.	
HTWFFH73	761686	7099	239 - 460	16851		H0436: 1 and L0777: 1.	
HTWFFH42	713667	7100	395 - 523	16852		H0436: 1, L0748: 1 and L0749: 1.	
HTWFG29	800193	7101	1 - 93	16853	Phe-13 to Glu-20.	H0436: 1	
HTWFD63	745010	7102	1 - 183	16854	Lys-21 to Lys-27, Arg-32 to Ser-37.	L0748: 2 and H0436: 1.	
HTWEY89	864553	7103	2 - 229	16855	Met-50 to Glu-63.	H0436: 1 and L0740: 1.	8q13 122560, 214400.

HTWEC090	788559	7104	316 - 322	16856	Ser-70 to Pro-76.	L0745: 9 and H0436: 1.	602476
HTWEJ74	765512	7105	64 - 228	16857		H0436: 1 and L0756: 1.	
HTWEH76	876853	7106	319 - 639	16858	Val-1 to Thr-16.	H0436: 1 and L0601: 1.	
HTWEC75	767264	7107	426 - 581	16859	Lys-1 to Glu-10, Leu-15 to Leu-22, Glu-35 to Asn-41.	L0745: 4, L0750: 2 and H0436: 1.	
HTWDR91	869526	7108	130 - 447	16860		H0436: 1	
HTWDC06	935644	7109	211 - 345	16861	Leu-23 to Gly-32.	L0809: 1 and H0436: 1.	
HTWDK68	753086	7110	253 - 399	16862	Met-36 to Asn-43.	H0436: 1 and L0608: 1.	
HTWDJ42	713869	7111	105 - 269	16863	Gly-5 to His-13, Lys-22 to Glu-27.	H0436: 1 and L0748: 1.	
HTWDI49	723047	7112	138 - 281	16864	Ser-24 to Trp-32.	L0745: 2, H0436: 1 and L0780: 1.	
HTWDE70	844831	7113	188 - 358	16865		H0436: 1	
HTWCL86	859421	9616	123 - 239	19368			
HTWCJ08	959591	7114	134 - 229	16866		H0436: 1	
HTWCQ06	935642	7115	201 - 413	16867	Asn-22 to Asp-27, Leu-31 to Lys-36.	H0436: 1 and L0758: 1.	
HTWCD06	935646	7116	215 - 319	16868	Thr-1 to Pro-9.	L0766: 1 and H0436: 1.	
HTWCB69	729244	7117	387 - 542	16869		L0517: 1 and H0436: 1.	
		7118	27 - 290	16870	Gly-32 to Gly-38, Gly-41 to Glu-53, His-58 to Phe-69.	H0436: 1 and L0748: 1.	
HTWBW72	772117	7119	244 - 2	16871		H0436: 1 and L0439: 1.	
HTWBV33	594496	7120	1053 - 769	16872		H0436: 1	
	701754	9617	344 - 189	19369			
	813291	9618	299 - 517	19370	Pro-37 to His-49, Thr-56 to Lys-64.		
HTWBV03	869549	7121	483 - 650	16873		L0766: 5, H0436: 1 and L0740: 1.	139330, 139360, 150250, 164500, 182280, 227646, 261510, 600163, 600971, 601154, 601226, 601267, 601373



HTWBT62	742588	7122	26 - 208	16874	Glu-6 to Lys-13, Thr-29 to Glu-39, Arg-48 to Glu-59.	H0436: 1 and L0748: 1.	
HTWBP67	751752	7123	102 - 221	16875		H0436: 1 and L0747: 1.	
HTWBL08	959619	7124	221 - 418	16876	Asn-6 to Ser-15.	H0436: 1 and L0747: 1.	
HTWBJ04	922175	7125	132 - 362	16877	Pro-12 to Gly-20.	L0598: 1 and H0436: 1.	
HTWBF27	683546	7126	82 - 360	16878		H0436: 1 and L0752: 1.	
HTWBE63	745194	7127	181 - 309	16879	Pro-1 to Gly-12.	H0436: 1 and L0753: 1.	
HTWBD84	783120	7128	232 - 477	16880	Leu-61 to His-66.	H0436: 1 and L0748: 1.	
HTWBD61	604245	7129	285 - 569	16881		H0436: 1	
	824129	9619	418 - 167	19371	Ala-49 to Glu-56.		
HTWAM49	722141	7130	235 - 444	16882		H0187: 1 and L0748: 1.	
HTWAM48	518825	7131	33 - 308	16883	Ser-59 to Glu-71.	L0605: 2 and H0187: 1.	
HTWAM25	677506	7132	744 - 289	16884	Thr-1 to Lys-11.	L0758: 5, L0794: 4, L0803: 3, L0744: 2, L0756: 2, L0435: 1, L0804: 1, L0806: 1, L0805: 1, L0776: 1, L0809: 1, L0789: 1, H0187: 1, L0439: 1, L0751: 1, L0779: 1 and L0591: 1.	
HTWAJ11	967845	7133	261 - 443	16885	His-21 to Pro-27.	L0759: 2, L0657: 1 and H0187: 1.	
HTWAE31	725127	7134	3 - 191	16886		H0187: 1 and L0439: 1.	
HTWAB85	522346	7135	89 - 307	16887		H0187: 1	
HTWAB65	533745	7136	151 - 429	16888	Tyr-18 to Lys-31, Ser-50 to Arg-59.	H0187: 1	
HTWAB57	735153	7137	24 - 191	16889	Lys-15 to Ile-20.	H0187: 1	
HTWAB46	522817	7138	87 - 218	16890		H0187: 1	
HTWAB42	714291	7139	23 - 217	16891	Ser-1 to Asp-10, Lys-36 to Glu-43.	H0187: 1	
HTWAB32	524291	7140	187 - 321	16892	Leu-7 to Leu-13, Pro-15 to Cys-20, Pro-23 to Cys-28.	H0187: 1	
HTWAB27	522796	7141	54 - 134	16893		H0187: 1	
HTWAB18	522794	7142	124 - 207	16894		H0187: 1	
HTWAA90	789271	7143	196 - 426	16895	Val-3 to Thr-10.	H0187: 1	

HTWAA79	809563	7144	214 - 405	16896	Glu-31 to Leu-40.	H0187: 1
HTWAA42	522603	7145	2 - 85	16897	Ser-20 to Leu-28.	H0187: 1
HTWAA32	522797	7146	281 - 439	16898		H0187: 1
HTWAA31	915276	7147	77 - 337	16899		H0187: 1
HTWAA22	425133	7148	48 - 287	16900	Glu-39 to Thr-47.	H0187: 1
HTWAA17	667166	7149	46 - 276	16901	Ser-17 to Lys-32.	H0187: 1
HTWAE10	968397	7150	237 - 404	16902		H0185: 1, L0509: 1, L0607: 1 and L0493: 1.
HTUAA93	522950	7151	1 - 267	16903		H0185: 1
HTUAA79	773978	7152	196 - 360	16904		H0185: 1
HTUAA63	522080	7153	3 - 134	16905		H0185: 1
HTUAA59	556958	7154	151 - 318	16906	Pro-33 to Ser-38.	H0185: 1
HTUAA55	522805	7155	74 - 226	16907	Thr-4 to Asp-10.	H0185: 1
HTUAA51	725949	7156	216 - 317	16908	Leu-5 to Phe-11.	L0740: 2 and H0185: 1.
HTUAA45	526606	7157	3 - 203	16909	Gly-39 to Ile-46.	H0185: 1
HTUAA42	694535	7158	38 - 115	16910	Glu-15 to Cys-23.	H0185: 1
HTUAA32	522807	7159	95 - 187	16911	Glu-15 to Phe-20.	H0185: 1
HTUAA25	575308	7160	168 - 452	16912		L0748: 2 and H0185: 1.
HTUAA23	575319	7161	165 - 371	16913	Arg-6 to Leu-15, Leu-23 to Gly-28.	H0185: 1
HTUAA21	575312	7162	2 - 343	16914		H0185: 1
HTUAA11	967919	7163	57 - 173	16915		H0185: 1
HTUAA06	960761	7164	229 - 384	16916	Asp-1 to Glu-9, Gly-35 to Gly-42.	H0185: 1
HTUAA02	921277	7165	178 - 2	16917	Ser-1 to Thr-9, Glu-16 to Leu-22.	H0185: 1
HTSH155	576030	7166	129 - 233	16918	His-3 to Tyr-10, Lys-29 to Asn-34.	H0087: 1
HTSHC81	778008	7167	224 - 370	16919		H0087: 1 and L0602: 1.
HTSHB38	709445	7168	3 - 236	16920	Pro-10 to Ala-16.	L0589: 2 and H0087: 1.
HTSHB18	666569	7169	20 - 142	16921	Glu-18 to Lys-23, Ser-36 to Arg-41.	H0087: 1, L0438: 1, L0740: 1 and L0758: 1.
HTSGZ92	975082	7170	1 - 297	16922	Glu-3 to Thr-9.	H0087: 1 and L0809: 1.
HTSQ88	576077	7171	3 - 245	16923	Glu-24 to Arg-38.	H0087: 1

HTSGQ42	576078	7172	1 - 282	16924	Ala-69 to Arg-81. Gly-1 to Glu-6. Pro-15 to Pro-23, Ser-29 to Glu-46, Leu-48 to Asp-66. Pro-21 to Lys-28.	H0087: 1	
HTSGM53	728289	7173	199 - 420	16925	Asp-64 to Ser-76, Thr-78 to Ala-86.	L0748: 2 and H0087: 1.	
HTSGI39	787027	7174	336 - 539	16926	Ala-1 to Pro-9.	H0087: 1 and L0753: 1.	
HTSFU94	793056	7175	1 - 267	16927	Pro-45 to Pro-55, Pro-63 to Cys-74, Pro-85 to Val-98.	L0747: 3, H0087: 1 and L0731: 1.	
HTSFF64	747003	7176	2 - 412	16928	Asn-36 to His-48.	H0087: 1, L0744: 1 and L0731: 1.	
HTSEX79	524280	7177	20 - 253	16929	Gln-16 to Phe-30.	H0087: 1	
HTSEW02	920963	7178	85 - 264	16930	Ser-53 to Phe-59.	L0803: 3, H0087: 1, L0754: 1 and L0749: 1.	
HTSAA20	836021	7179	156 - 350	16931		H0087: 1 and L0748: 1.	
HTOIZ05	869900	7180	2 - 316	16932		H0264: 1	
HTOIV25	869903	9620	472 - 768	19372	Pro-7 to Pro-17.	H0264: 1	
HTOIT60	456941	7181	2 - 199	16933	Asn-1 to Ile-11.	H0264: 1 and L0754: 1.	
HTOIN69	740599	7182	185 - 304	16934		H0264: 1 and L0748: 1.	
HTOIN69	869925	7183	2 - 187	16935		H0264: 1	
HTOIM95	795719	7184	506 - 315	16936			
HTOIM95	796022	9621	66 - 260	19373			
HTOIL36	866492	7185	327 - 662	16937	Ser-9 to His-14, Gly-40 to Thr-46. Glu-30 to Asp-36.	H0264: 1	
HTOIF70	457041	7186	208 - 408	16938	Ser-24 to Asp-31.	H0264: 1 and L0748: 1. 22q13.31	250100, 250800, 250800
HTOIB05	932423	7187	1 - 258	16939		H0264: 1, L0748: 1 and L0745: 1.	
HTOIZ49	586144	7188	28 - 219	16940		AR054: 35, AR050: 33, AR051: 28 H0264: 1	
HTOIX57	735004	7189	156 - 341	16941	Asn-36 to His-48.	L0748: 2 and H0264: 1.	
HTOIQ30	584928	7190	252 - 407	16942		H0264: 1 and L0749: 1.	
HTOIL74	765840	7191	1 - 384	16943	Thr-53 to Pro-58,	H0264: 1 and L0747: 1.	

HTOIK90	557829	7192	130 - 273	16944	His-103 to Leu-109, Gln-112 to Tyr-126.		
HTOIJ84	783212	7193	342 - 500	16945	Gln-14 to Tyr-22.	H0264: 1	
HTOIH68	753595	7194	201 - 371	16946	Gln-1 to Arg-8.	L0754: 2 and H0264: 1.	
HTOIH09	961168	7195	59 - 190	16947	Pro-11 to Gly-16.	H0264: 1 and L0605: 1.	
HTOIF08	959992	7196	162 - 488	16948		S0005: 1 and H0264: 1.	
HTOIA89	787088	7197	491 - 252	16949	Pro-1 to Arg-10.	L0459: 1, H0264: 1, L0744: 1 and L0752: 1.	
HTOIA82	844319	7198	41 - 286	16950	Lys-1 to Lys-7.	H0264: 1 and L0748: 1.	
HTOHZ59	869950	7199	26 - 355	16951	Arg-44 to Gly-59.	AR061: 4, AR089: 2	
HTOHX62	537358	7200	3 - 92	16952	Ser-10 to Gln-16, Asp-28 to Pro-36.	H0264: 1 and L0754: 1.	
HTOHT93	791459	7201	162 - 440	16953	Gln-1 to Ile-15.	L0596: 1.	
HTOHR03	924976	7202	6 - 329	16954		AR051: 11, AR054: 1, AR050: 1	
HTOHN89	956264	7203	167 - 427	16955	Pro-64 to Thr-70.	H0264: 1	
HTOHI14	659280	7204	119 - 478	16956	Arg-13 to Gln-21, Phe-25 to Ser-33, Pro-85 to Lys-92.	H0264: 1 and L0366: 1.	
HTOHH78	963216	7205	544 - 888	16957	Asn-42 to Lys-54.	L0794: 2 and H0264: 1.	
HTOHG68	964961	7206	1 - 183	16958		H0264: 1, L0748: 1 and L0749: 1.	
HTOGLJ88	558488	7207	100 - 285	16959	Thr-4 to Cys-15, Glu-31 to Arg-36, Gln-68 to Thr-80.	H0264: 1	
HTOGU778	529798	7208	52 - 138	16960	Ser-98 to Gln-105.	L0601: 2 and H0264: 1.	
HTOGU77	523533	7209	40 - 132	16961	Ser-10 to Pro-19, Thr-23 to Arg-35, Asn-56 to Arg-61.	H0264: 1	
HTOGC91	790438	7210	308 - 463	16962		H0264: 1	
HTOFV57	529614	7211	35 - 184	16963	Asn-1 to Gln-14.	H0264: 1 and L0439: 1.	
HTOFV08	960203	7212	1 - 150	16964	Ala-11 to Tyr-16.	H0264: 1	

HTOFU55	732454	7213	77 - 196	16965	Lys-43 to Pro-50.	H0264: 1 and L0749: 1.
HTOFT20	527938	7214	1 - 60	16966	Glu-9 to Tyr-16.	H0264: 1
HTOFS74	765918	7215	46 - 174	16967	Pro-15 to Leu-20.	H0264: 1 and L0599: 1.
HTOFO18	911756	7216	1179 - 1376	16968	Pro-1 to Trp-13.	H0264: 1
HTOFC06	911956	9622	980 - 1156	19374	Asn-25 to Leu-34.	
HTOEX28	960346	7217	84 - 266	16969	Arg-15 to Gly-22.	H0264: 1 and L0803: 1.
HTOEV91	936543	7218	280 - 513	16970	Pro-11 to Tyr-16.	H0264: 1 and L0747: 1.
	509938	7219	268 - 38	16971	Thr-24 to Ser-35.	H0264: 1
	534071	9623	581 - 408	19375	Thr-31 to Gly-36.	
HTOET61	742164	7220	323 - 445	16972		H0264: 1 and L0766: 1.
HTOEE28	685375	7221	83 - 259	16973		H0264: 1
HTODM08	869988	9624	306 - 530	19376	Leu-12 to Phe-18.	H0264: 1 and L0755: 1.
HTODL10	960113	7222	2 - 400	16974	Ser-4 to Glu-14.	H0264: 1 and L0601: 1.
	968395	7223	1 - 282	16975	Gln-16 to Ala-24.	
HTODD59	738532	7224	287 - 400	16976	Pro-3 to Gln-11.	H0264: 1 and L0754: 1.
HTODA31	698400	7225	56 - 436	16977	Gln-4 to Ala-19, Ser-63 to Asn-80, Glu-104 to Ile-110, Pro-121 to Lys-127.	L0777: 2 and H0264: 1.
HTOCK85	521944	7226	1 - 201	16978	Arg-12 to Tyr-19,	H0272: 1
HTOCK73	870004	7227	103 - 351	16979	Tyr-27 to Thr-33, Asn-62 to Ser-71.	H0272: 1
HTOCK14	529958	7228	2 - 298	16980		H0272: 1
HTOCK03	925368	7229	2 - 124	16981	Phe-21 to Lys-33.	H0272: 1
HTOCA55	732469	7230	20 - 148	16982		H0272: 1 and L0748: 1.
HTOBE60	742315	7231	281 - 469	16983	Ile-1 to Asn-6,	H0272: 1
HTOBC63	530283	7232	2 - 190	16984	Gly-10 to Lys-29.	
HTOBC26	870011	7233	1 - 159	16985		H0272: 1
HTOBA33	965151	7234	295 - 525	16986		L0439: 2, H0272: 1 and L0766: 1.

HTOAT88	530183	7235	268 - 411	16987		H0264: 1
HTOAT81	530185	7236	1 - 231	16988		H0264: 1
HTOAT68	530187	7237	11 - 187	16989	Arg-1 to Glu-16.	H0264: 1
HTOAT66	530188	7238	62 - 208	16990		H0264: 1
HTOAT63	523754	7239	122 - 292	16991	Ser-1 to Thr-6.	H0264: 1
HTOAT57	870017	7240	19 - 126	16992	Glu-20 to Arg-27.	H0264: 1
HTOAT50	723595	7241	3 - 176	16993		H0264: 1
HTOAT43	529840	7242	52 - 135	16994		H0264: 1
HTOAT35	521914	7243	2 - 100	16995	Asn-1 to Thr-15.	H0264: 1
HTOAT28	530191	7244	180 - 326	16996	Lys-7 to Gly-15.	H0264: 1
HTOAT27	682115	7245	101 - 295	16997	Phe-5 to Ala-10, Glu-12 to Asn-17, Val-21 to Asp-35, Ile-58 to Asp-64.	H0264: 1
HTOAT06	960581	7246	2 - 241	16998		H0264: 1
HTOAO63	745545	7247	440 - 634	16999	Arg-1 to Ile-9.	H0264: 1 and L0748: 1.
HTOAO01	921744	7248	1 - 165	17000		H0264: 1 and L0754: 1.
HTOAM08	960122	7249	23 - 181	17001	Ser-3 to Thr-11.	H0264: 1 and L0758: 1.
HTOAL84	783261	7250	2 - 118	17002	Ser-20 to Thr-27.	H0264: 1 and L0748: 1.
HTOAK39	709579	7251	109 - 435	17003	Pro-33 to Ser-39.	H0264: 1 and L0581: 1.
HTOAI51	529553	7252	44 - 193	17004		H0264: 1
HTOAI25	529556	7253	1 - 105	17005		H0264: 1
HTOAI15	529557	7254	61 - 261	17006		H0264: 1
HTOAD05	932732	7255	261 - 94	17007		H0264: 1 and L0608: 1.
HTOAA73	764707	7256	89 - 217	17008		H0264: 1 and L0599: 1.
HTJNX95	795376	7257	1 - 465	17009	Leu-29 to Lys-36.	H0488: 1 and L0439: 1.
HTJNT65	771995	7258	195 - 311	17010	Ala-1 to Thr-7.	L0731: 2 and H0488: 1.
HTJNF11	966217	7259	232 - 582	17011	Ser-5 to Asp-11, Arg-18 to Asn-27, Pro-33 to Glu-39, Ser-44 to Thr-50.	H0488: 1 and L0766: 1.
HTJMJ289	973076	7260	2 - 181	17012		H0488: 1
HTJMU86	870312	7261	268 - 408	17013	Ser-1 to Ala-7.	H0488: 1 and L0766: 1.
HTJMQ90	974496	7262	98 - 223	17014		H0488: 1
HTJML71	759890	7263	1 - 261	17015	Phe-11 to Thr-21.	H0488: 1 and L0766: 1.

HTJMF56	733444	7264	257 - 481	17016	Leu-67 to Ser-75.		
HTJAE78	773609	7265	177 - 404	17017	Ala-22 to Tyr-28.	H0488: 1 and L0740: 1.	
HTJAD50	724438	7266	149 - 298	17018	Thr-13 to Lys-18.	H0487: 1	
HTHDS68	753137	7267	3 - 230	17019		H0487: 1 and L0748: 1.	
HTHDR27	578830	7268	150 - 344	17020	Pro-27 to Ser-33, Ser-39 to Pro-44.	H0063: 1 and L0748: 1 and L0749: 1.	
HTHDQ05	932174	7269	36 - 302	17021		H0063: 1	
HTHDM10	964906	7270	88 - 228	17022	His-16 to Phe-28, Arg-37 to Lys-43.	H0063: 1 and L0769: 1.	
HTHDL30	578894	7271	3 - 314	17023		H0063: 1	
HTHDI93	792443	7272	170 - 457	17024	Asp-1 to His-6.	L0759: 2 and H0063: 1.	
HTHDI13	490673	7273	381 - 175	17025	Ala-49 to Asn-54.	H0063: 1	
HTHDE83	516372	7274	279 - 413	17026	Ser-5 to Asp-11.	H0063: 1	
HTHDC07	826819	9625	456 - 304	19377			
HTHCV69	953604	7275	327 - 533	17027	Glu-13 to Glu-21.	H0063: 1 and L0764: 1.	
HTHCV69	973309	7276	137 - 343	17028	Pro-28 to Cys-39.	H0063: 1	
HTHCU42	578861	7277	3 - 224	17029	Gln-7 to Arg-15, Ser-22 to Cys-29.	H0063: 1	
HTHC072	578758	7278	177 - 323	17030		H0063: 1	
HTHC045	722029	7279	1 - 159	17031	Thr-14 to Gly-22, Ser-40 to Glu-45.	H0063: 1	
HTHCK89	694051	7280	276 - 1	17032	Arg-14 to Thr-27, Leu-36 to Gly-42, Arg-51 to Cys-73, Glu-82 to Arg-92.	H0063: 1, L0657: 1 and L0592: 1.	
	870359	9626	1 - 489	19378	Gln-31 to Trp-36, Arg-61 to Lys-80, Pro-93 to Thr-100.		
	870365	9627	219 - 539	19379	Thr-19 to Gly-24.		
HTHCG74	578839	7281	1 - 87	17033		H0063: 1	
HTHBY73	946168	7282	1 - 360	17034	Asp-38 to Gly-44, Cys-92 to Gly-98, Ala-101 to Trp-106.	AR061: 12, AR089: 9 H0063: 1	
HTHBW81	519640	7283	134 - 283	17035	His-40 to Asn-47.	H0063: 1	

	625209	9628	485 - 147	19380	Glu-10 to Gln-15.			
HTHBW64	746955	7284	318 - 563	17036	Ser-12 to Lys-20, Ala-31 to His-36.	H0063: 1 and L0754: 1.		
HTHBW25	961627	7285	294 - 554	17037	Phe-20 to Ser-26, Pro-47 to Thr-55.	L0439: 3 and H0063: 1.		
HTHBT36	458387	7286	146 - 310	17038	Asn-15 to Gln-27, Ser-41 to Gly-47.	H0063: 1 and L0748: 1.		
HTHBM85	790305	7287	1 - 483	17039	Gly-1 to Arg-7.	H0063: 1 and L0439: 1.	15q24-q25	118485, 231680, 272800, 272800, 272800, 276700, 602685
HTHBM60	739707	7288	58 - 201	17040	Tyr-21 to Ser-33.	H0063: 1 and L0777: 1.		
HTHBK64	573926	7289	181 - 273	17041	Arg-15 to Leu-20, Gly-24 to Arg-31.	H0063: 1		
HTHBK47	526705	7290	46 - 240	17042	Gly-1 to Arg-9, Gln-15 to Gly-26, Gln-29 to Phe-35.	H0063: 1		
HTHBK04	925600	7291	2 - 148	17043		H0063: 1		
HTHBH32	699557	7292	119 - 589	17044	Thr-7 to Arg-19, Lys-60 to Leu-68, Val-107 to Gln-119.	L0803: 2, L0750: 2, H0063: 1, L0763: 1, L0772: 1 and L0789: 1.		
HTHBG23	410319	7293	3 - 182	17045	Ile-1 to Cys-8, Ser-11 to Leu-22, His-25 to Gly-33.	H0063: 1		
HTHBC07	954440	7294	323 - 213	17046	Ser-9 to Ser-15.	H0063: 1		
HTHBC04	933029	7295	123 - 16	17047		H0063: 1 and L0764: 1.		
HTHAA24	575493	7296	3 - 239	17048	Ser-49 to Asp-54, Lys-56 to Asp-71.	H0062: 1		
HTGG027	682376	7297	3 - 185	17049	Val-2 to Arg-11.	S0218: 1 and L0754: 1.		
HTGDN71	760059	7298	249 - 428	17050	Phe-1 to Asp-7.	S0218: 1 and L0748: 1.		
HTGDN51	870386	7299	47 - 238	17051		S0218: 1 and L0367: 1.		
HTGPN55	731360	7300	1 - 141	17052	Ala-1 to Ala-7, His-20 to Gly-38.	S0218: 1		
HTGPN05	928205	7301	35 - 145	17053	Leu-7 to His-12.	S0218: 1		
HTGPK70	756534	7302	3 - 131	17054	Gly-7 to Ser-12.	S0218: 1 and L0777: 1.		
HTOEY89	786057	7303	2 - 202	17055	Pro-59 to Trp-67.	S0218: 1		



HTGEX40	711177	7304	76 - 246	17056		S0218: 1		
HTGEX10	963862	7305	301 - 1017	17057	Arg-3 to Ser-9, Arg-11 to Tyr-30, Thr-38 to Tyr-49, Thr-101 to Arg-107, Gly-139 to Tyr-146, Tyr-215 to Lys-223, Glu-1 to Arg-10, Ser-26 to Gly-39, Asp-48 to Phe-55, Ser-68 to Gly-85, Ser-32 to Lys-42, Pro-21 to Gly-31.	AR089: 43, AR061: 9 S0218: 1 and L0623: 1.		
HTGEX03	923445	7306	135 - 317	17058		S0218: 1 and L0605: 1.		
HTGEX48	721660	7307	238 - 425	17059		S0218: 1 and L0599: 1.		
HTGEX89	786665	7308	28 - 228	17060		S0218: 1 and L0748: 1.		
HTGEX17	662369	7309	254 - 508	17061		L0766: 3, S0218: 1, L0789: 1 and L0748: 1.		
HTGED13	656504	7310	119 - 244	17062		S0218: 1 and L0748: 1.		
HTGEA37	908606	7311	3 - 122	17063		S0218: 1 and L0758: 1.	17q11.2	154275, 162200, 162200, 182138, 239100, 600881, 601954, 602403
HTGDX37	708877	7312	86 - 466	17064		L0748: 2, S0134: 1 and L0749: 1.		
HTGDX10	963854	7313	86 - 316	17065	Ser-8 to Arg-14.	S0134: 1 and L0517: 1.		
HTGDV61	741381	7314	297 - 515	17066		S0134: 1, L0766: 1 and L0749: 1.		
HTGDV52	796065	7315	104 - 364	17067	Asn-13 to Leu-18, Pro-68 to Ser-73, Thr-46 to Ser-55.	L0747: 2, S0134: 1, L0439: 1, L0749: 1 and L0756: 1.		
HTGCQ86	784676	7316	3 - 392	17068		L0748: 2 and S0134: 1.		
HTGCH60	895628	7317	382 - 134	17069		S0134: 1		
HTGCD55	732247	7318	523 - 678	17070		L0748: 2 and S0134: 1.		
HTGBS94	578786	7319	238 - 399	17071		S0134: 1		
HTGBS70	870405	7320	1 - 120	17072	Glu-14 to Ala-19.	S0134: 1		
HTGBS59	739388	7321	155 - 286	17073		S0134: 1 and L0756: 1.		
HTGBS51	578782	7322	66 - 167	17074		S0134: 1		
HTGBS34	576472	7323	3 - 200	17075		S0134: 1 and L0756: 1.		
HTGBS08	959699	7324	565 - 810	17076	Leu-10 to His-15, Gly-31 to Glu-36, Glu-53 to Gly-65.	L0748: 2 and S0134: 1.		

HTGBR52	727276	7325	230 - 391	17077	Phe-20 to Ser-25.	L0754: 2 and S0134: 1.	16q22	103850, 114835, 121360, 217800, 218030
HTGBN58	738229	7326	114 - 233	17078				
HTGBL15	660483	7327	225 - 518	17079		S0134: 1 and L0439: 1.		
HTGBH09	625756	7328	7 - 126	17080	Glu-29 to Arg-40.	S0134: 1 and L0748: 1.		
HTGBE67	751525	7329	55 - 228	17081		L0598: 2 and S0134: 1.		
HTGBE59	578807	7330	27 - 185	17082	Lys-1 to Lys-7.	S0134: 1		
HTGBE05	932168	7331	127 - 375	17083	Pro-54 to Pro-59.	S0134: 1		
HTGAZ86	785594	7332	96 - 239	17084		S0134: 1 and L0748: 1.		
HTGAZ75	766583	7333	342 - 479	17085		S0134: 1 and L0748: 1.		
HTGAY27	683556	7334	31 - 252	17086		L0367: 2, S0134: 1, L0370: 1, L0652: 1, L0748: 1 and L0605: 1.		
HTGAX83	781275	7335	1 - 210	17087	Asn-18 to Cys-24, Arg-57 to Pro-70.	S0134: 1 and L0756: 1.		
HTGAW78	773666	7336	199 - 417	17088	Leu-43 to Thr-48.	S0134: 1 and L0766: 1.		
HTGAT92	496307	7337	503 - 297	17089		S0134: 1 and L0766: 1.		
HTGAT55	732248	7338	162 - 446	17090	Pro-23 to Pro-32, Arg-46 to Trp-51.	L0749: 2 and S0134: 1.		
HTGAT16	919524	7339	141 - 356	17091		S0134: 1 and L0748: 1.		
HTGAT01	870424	7340	67 - 372	17092		S0134: 1 and L0766: 1.		
HTGAS15	870423	7341	14 - 223	17093	Lys-11 to Cys-18.	S0134: 1, L0756: 1 and L0759: 1.		
HTGAR44	716740	7342	22 - 309	17094	Trp-49 to Ala-54, His-62 to Asp-71, Gln-88 to Ser-96.	S0134: 1 and L0581: 1.		
HTGAK39	705634	7343	3 - 173	17095	Pro-31 to Gln-36.	S0134: 1 and L0766: 1.		
HTGAJ86	785672	7344	3 - 113	17096	Leu-15 to Arg-24.	S0134: 1 and L0749: 1.		
HTGAJ73	764598	7345	194 - 430	17097	Arg-26 to Gln-31, Gly-51 to Gln-59.	S0134: 1 and L0748: 1.		
HTGAJ96	796541	7346	349 - 618	17098	Leu-6 to Gly-11.	S0134: 1, L0748: 1 and L0756: 1.		
HTGAIL5	870441	7347	214 - 462	17099		S0134: 1 and L0749: 1.		
HTGAIL3	955227	7348	178 - 387	17100	Asn-29 to Lys-37.	S0134: 1 and L0748: 1.		

HTGAD62	754052	7349	1 - 126	17101		Gln-29 to Phe-35, Pro-73 to Pro-79, Pro-86 to Pro-99, Ala-13 to Leu-23, Ala-30 to Asp-40,	S0134: 1 and L0731: 1, AR051: 22, AR050: 19, AR054: 17 S0134: 1
HTGAD16	567432	7350	204 - 554	17102			
HTGAD05	932378	7351	223 - 372	17103			
HTGAC17	664513	7352	2 - 220	17104			
HTGAA80	574099	7353	119 - 277	17105			
HTGAA44	574114	7354	42 - 266	17106			
HTDAC74	765656	7355	6 - 311	17107			
HTDAB18	870746	7356	339 - 659	17108			
HTBAB07	954434	7357	3 - 224	17109			
HTBAA86	785846	7358	160 - 420	17110			
HTAJP12	969518	7359	438 - 79	17111			
HTADJ72	880561	7360	237 - 88	17112			
HTAIY90	973870	7361	202 - 411	17113			
HTAIQ05	930947	7362	147 - 359	17114			
HTAGS8	838701	7363	288 - 452	17115			
HTAIF22	910040	7364	179 - 457	17116			
HTAIF11	965738	7365	3 - 461	17117			
HTAHZ02	918304	7366	65 - 277	17118			
HTAGB16	870855	7367	249 - 569	17119			
HTAFC92	790991	7368	113 - 418	17120			

HTAEV23	959129	7369	823 - 329	17121	Leu-7 to Lys-16, Thr-31 to Arg-41, Lys-54 to Asn-61, Ser-89 to His-104, Lys-126 to Lys-131.	AR061: 6, AR089: 4 H0069: 1		
HTAEP05	932459	7370	52 - 228	17122	Arg-41 to Glu-46, Glu-49 to Arg-59.	H0069: 1, L0370: 1, L0776: 1 and L0738: 1.		
HTABK41	870858	7371	1 - 306	17123	Gly-1 to Arg-7.	H0069: 1	2q37.2	
HTABF68	753597	7372	1 - 168	17124	Thr-27 to Ser-40.	H0069: 1 and L0439: 1.		
HTADW88	425065	7373	114 - 221	17125		H0069: 1		
HTADW52	537376	7374	63 - 170	17126	Trp-1 to Gly-7.	H0069: 1		
HTADO10	968307	7375	3 - 161	17127		H0069: 1 and L0438: 1.		
HTADB68	753598	7376	3 - 134	17128	Pro-6 to Lys-17.	H0069: 1 and L0748: 1.		
HTACX05	932467	7377	419 - 661	17129	Ser-16 to Gly-22.	H0069: 1 and L0750: 1.		
HTACW82	778852	7378	3 - 134	17130	Ser-1 to Gly-15.	H0069: 1 and L0748: 1.		
HTABK47	720684	7379	161 - 526	17131		L0749: 2, H0069: 1 and L0748: 1.		
HTABE12	971524	7380	98 - 187	17132		H0069: 1 and L0748: 1.		
HTAAO12	972231	7381	64 - 291	17133		H0069: 1 and L0643: 1.		
HTAAB06	960796	7382	110 - 15	17134	Ser-1 to Gly-9 Pro-12 to Gly-25, Pro-27 to Glu-32.	L0518: 4 and H0069: 1.		
HTAAA45	518652	7383	299 - 123	17135	Asn-6 to Ser-11, Pro-28 to Trp-37, Thr-39 to Lys-50.	H0069: 1		
HTAAA31	693527	7384	130 - 2	17136	Phe-19 to Glu-24.	H0069: 1 and L0740: 1.		
HT4AY23	973773	7385	2 - 169	17137	Pro-2 to Cys-18, Phe-22 to Gly-29.	H0141: 1		
HT3TA67	752169	7386	1 - 483	17138	Glu-1 to Ser-9, Ser-43 to Glu-53, Leu-84 to Phe-92, Leu-96 to Ile-101.	L0439: 3 and H0223: 1.		
HT3SH28	508061	7387	1 - 210	17139	Glu-16 to Ser-21, Thr-48 to Lys-56.	H0222: 1		
HT3SA81	589206	7388	3 - 272	17140	Pro-27 to Ser-35, Pro-51 to Trp-58.	H0222: 1	1q21	104770, 107670, 110700, 135940.

HT3SA80	781631	7389	134 - 349	17141	Gly-27 to Ala-33.	H0222: 1	145001, 146790,
HT3SA71	766391	7390	54 - 326	17142	Gln-20 to Phe-26, Val-73 to Asn-91.	H0222: 1	152445, 152445,
HT3SA56	522757	7391	233 - 418	17143	Asn-32 to Lys-43.	H0222: 1	159001, 174000,
HT3BK75	766488	7392	1 - 273	17144	Val-27 to Ser-33.	H0159: 1 and L0743: 1.	179755, 182860,
HT3BF33	527782	7393	80 - 181	17145	Val-27 to Ser-33.	H0159: 1	182860, 182860,
HT2TA82	522751	7394	77 - 160	17146	Glu-38 to Ser-44.	H0221: 1	191315, 230800,
HT2TA37	522754	7395	20 - 193	17147	Ser-9 to Ser-14.	H0220: 1	230800, 266200,
HT2SA86	524290	7396	101 - 265	17148	Glu-30 to Ile-36, Tyr-38 to His-43.	H0220: 1	600897, 601105,
HT2SA63	518341	7397	37 - 171	17149	Pro-1 to Asn-7.	H0220: 1	601412, 601652,
HT2SA50	522771	7398	180 - 326	17150	Gly-23 to Ile-28.	L0748: 2 and H0220: 1.	602491
HT2SA48	508077	7399	52 - 273	17151	Gly-23 to His-31.	H0220: 1	
HT2SA47	578704	7400	110 - 247	17152		H0220: 1	
HT2SA38	840184	7401	21 - 155	17153		H0220: 1	
HT2SA37	695038	7402	2 - 97	17154		H0220: 1	
HT2SA26	522770	7403	403 - 272	17155	Lys-1 to Leu-11.	H0220: 1 and L0439: 1.	
HT2SA13	870917	7404	124 - 336	17156	Glu-1 to Val-11.	H0220: 1	
HT1TB40	575355	7405	114 - 251	17157	Leu-34 to Tyr-44.	H0219: 1	
HSYDH60	949156	7406	115 - 282	17158	Pro-20 to Ser-25, Phe-49 to Trp-54.	L0731: 2, H0551: 1, L0747: 1 and L0750: 1.	
HSYCZ04	976955	7407	233 - 376	17159		H0551: 1 and L0745: 1.	
HSYCV01	940661	7408	1 - 522	17160	Thr-11 to Arg-16.	H0551: 1 and L0740: 1.	

HSYCS04	926943	7409	247 - 134	17161			H0551: 1 and L0542: 1.
HSYBZ51	725386	7410	2 - 388	17162			H0551: 1 and L0752: 1.
HSYBX42	713630	7411	1 - 210	17163			H0551: 1 and L0601: 1.
HSYBW55	731627	7412	245 - 532	17164		Arg-10 to Arg-20, Ala-35 to Gly-54.	
HSYBK77	772067	7413	59 - 541	17165		Ile-1 to Asn-10.	H0551: 1, L0740: 1 and L0777: 1.
HSYBH70	756492	7414	89 - 475	17166		Val-1 to Asp-6, Val-10 to Asn-20, Gly-33 to Asn-46, Glu-57 to Ser-62, Ala-69 to Gln-74, Asp-90 to Ser-100.	L0439: 2, H0551: 1 and L0745: 1.
HSYBH16	661807	7415	2 - 571	17167		Pro-10 to Arg-16.	H0551: 1, L0747: 1 and L0777: 1.
HSYAV79	928403	7416	85 - 408	17168			H0551: 1 and L0766: 1.
HSYAU07	953032	7417	1 - 216	17169			H0551: 1, L0779: 1, L0592: 1 and L0608: 1.
HSYAF81	493771	7418	134 - 3	17170		Leu-22 to Ala-28, Lys-33 to Arg-44.	H0551: 1
HSMBD15	659891	7419	2 - 421	17171		Ser-36 to Thr-42.	S0298: 1 and L0740: 1.
HSMBG78	917244	7420	374 - 610	17172			S0298: 1 and L0759: 1.
HSMBA83	780932	7421	9 - 239	17173		Pro-9 to Trp-16, Pro-55 to Leu-61, Asn-70 to Gly-77.	S0298: 1 and L0756: 1.
HSMBA39	715630	7422	166 - 363	17174			L0770: 2, L0749: 2, S0298: 1, L0653: 1, L0776: 1, L0659: 1 and L0789: 1.
HSAZQ69	754362	7423	170 - 298	17175			S0114: 1 and L0754: 1.
HSAZP83	780400	7424	283 - 510	17176		Arg-15 to Ile-23, Thr-33 to Phe-39.	S0114: 1 and L0745: 1.
HSAZP65	747422	7425	15 - 284	17177			S0114: 1 and L0754: 1.
HSAZD64	746074	7426	326 - 517	17178		Leu-8 to Trp-13.	S0114: 1 and L0756: 1.
HSAZI53	727757	7427	239 - 337	17179		Leu-9 to His-14.	L0748: 2 and S0114: 1.
HSAZG52	726195	7428	274 - 396	17180		Ile-16 to Gly-21.	L0754: 2 and S0114: 1.
HSAZG23	950023	7429	120 - 467	17181			AR089: 40, AR061: 7

	963220	9629	466 - 152	19381	Pro-13 to Asp-20, Thr-27 to Arg-32, Lys-53 to Trp-59, Pro-65 to Gly-70, Gly-77 to Gly-86.	L0523: 2, S0114: 1, L0748: 1 and L0749: 1.
HSAZA42	866817	7430	136 - 324	17182	Ser-16 to Lys-21.	S0114: 1
HSAZA39	705365	7431	131 - 328	17183	Ile-15 to His-21.	S0114: 1 and L0594: 1.
HSAZA06	935451	7432	173 - 364	17184	Gln-9 to Leu-16.	S0114: 1
HSAYT37	708803	7433	170 - 316	17185	His-23 to Arg-29.	S0114: 1 and L0748: 1.
HSAYT29	866821	7434	343 - 585	17186		S0114: 1 and L0530: 1.
HSAYR63	744333	7435	-1 - 318	17187		S0114: 1 and L0748: 1.
HSAYO42	713793	7436	169 - 405	17188	Arg-8 to Phe-16, Gln-25 to Gly-31, Gln-37 to Asn-45.	S0114: 1 and L0754: 1.
HSAYK93	791546	7437	215 - 433	17189	Arg-16 to His-25, Arg-47 to Phe-57, Pro-60 to Ser-68.	L0749: 2 and S0114: 1.
HSAXS16	661933	7438	1 - 165	17190	Lys-40 to Ser-45, Cys-49 to Arg-55.	S0114: 1 and L0748: 1.
HSAXM08	866838	7439	343 - 648	17191	Val-34 to Asp-39, Ser-73 to Ser-87, Lys-93 to Arg-100.	S0114: 1
	958886	9630	212 - 499	19382		
HSAXI95	721825	7440	135 - 446	17192		S0114: 1 and L0439: 1.
HSAXI93	792516	7441	301 - 453	17193	Gln-6 to Lys-12.	S0114: 1 and L0757: 1.
HSAXI05	932387	7442	151 - 357	17194	Gln-6 to Asn-20, Val-22 to Thr-36.	S0114: 1 and L0756: 1.
HSAXH85	784475	7443	32 - 181	17195		S0114: 1 and L0748: 1.
HSAHG45	457077	7444	67 - 243	17196	Gln-13 to Ser-21.	S0114: 1 and L0756: 1.
HSAHE42	714040	7445	3 - 227	17197		L0742: 2 and S0114: 1.
HSAHE33	702673	7446	131 - 334	17198		S0114: 1 and L0753: 1.
HSAHC55	752368	7447	363 - 202	17199	Lys-24 to Gln-30, Ser-46 to Gln-54.	S0114: 1 and L0600: 1.
HSAHB89	787069	7448	102 - 224	17200	Leu-2 to Asp-12.	S0114: 1 and L0745: 1.

HSAWY92	792888	7449	114 - 389	17201	Leu-2 to Thr-7.	S0114: 1, L0748: 1 and L0749: 1.	
HSAWY81	574184	7450	21 - 239	17202	Tyr-21 to Arg-26, Val-48 to Ala-54.	S0114: 1	
HSAWY79	574182	7451	1 - 204	17203	His-56 to Ser-62.	S0114: 1	
HSAWY33	866861	7452	85 - 222	17204		S0114: 1 and L0592: 1.	
HSAWY07	953851	7453	241 - 381	17205		S0114: 1	
HSAWW74	765818	7454	40 - 120	17206		S0114: 1 and L0439: 1.	9p22.2
HSAWU12	968804	7455	72 - 368	17207	Ile-1 to Leu-8, Ser-31 to Thr-40, Glu-69 to Pro-80.	S0114: 1 and L0748: 1.	
HSAWS74	765819	7456	166 - 345	17208	Asn-44 to Arg-57.	S0114: 1 and L0595: 1.	
HSAWS40	711441	7457	37 - 159	17209		S0114: 1 and L0748: 1.	
HSAWR08	959943	7458	3 - 359	17210	Asn-13 to Lys-20, Val-92 to Arg-98.	L0758: 3 and S0114: 1.	
HSAWO08	959938	7459	176 - 319	17211	Ser-20 to Leu-28.	S0114: 1 and L0717: 1.	
HSAWL77	772444	7460	175 - 285	17212		L0748: 4 and S0114: 1.	
HSAWL68	753569	7461	143 - 292	17213	Gly-5 to Glu-10.	S0114: 1 and L0750: 1.	
HSAWK67	526767	7462	212 - 361	17214		S0114: 1	
HSAWK32	418690	7463	14 - 220	17215		S0114: 1	
HSAWK21	954897	7464	14 - 283	17216	Glu-51 to Asn-61.	S0114: 1	
HSAWK20	866872	7465	134 - 307	17217		S0114: 1	
HSAWK13	971177	7466	273 - 539	17218	Pro-15 to Phe-22, Gly-46 to His-55.	S0114: 1, L0779: 1 and L0591: 1.	
HSAW111	964949	7467	167 - 322	17219		S0114: 1 and L0754: 1.	
HSAWG44	716820	7468	146 - 346	17220	Leu-3 to Lys-9.	L0753: 2, S0114: 1 and L0521: 1.	
HSAWF86	675220	7469	38 - 253	17221		S0114: 1 and L0748: 1.	
HSAWF52	728598	7470	2 - 328	17222		S0114: 1 and L0745: 1.	
HSAWD34	706928	7471	194 - 349	17223		S0114: 1 and L0740: 1.	
HSAWD24	677435	7472	3 - 236	17224		S0114: 1 and L0748: 1.	
HSAWD15	660572	7473	316 - 447	17225		S0114: 1, L0438: 1 and L0439: 1.	
HSAWC55	866890	7474	102 - 347	17226	Ser-1 to Glu-12.	S0114: 1	
HSAWB70	757409	7475	12 - 170	17227		S0114: 1 and L0748: 1.	



HSAV282	881166	7476	115 - 291	17228			S0114: 1 and L0748: 1.
HSAV263	574195	7477	113 - 253	17229	Thr-5 to Thr-10.		S0114: 1
HSAVY10	968230	7478	36 - 212	17230			S0114: 1 and L0601: 1.
HSAVY02	920721	7479	81 - 422	17231	Thr-11 to Ser-18, Leu-56 to Gly-70.		S0114: 1, L0527: 1 and L0682: 1.
HSAVX22	674919	7480	116 - 247	17232			S0114: 1 and L0748: 1.
HSAVW13	862754	7481	115 - 225	17233			S0114: 1 and L0748: 1.
HSAVY36	866886	7482	2 - 208	17234			S0114: 1, L0748: 1 and L0361: 1.
HSAVS48	721856	7483	21 - 131	17235			S0114: 1 and L0746: 1.
HSAVQ73	929276	7484	501 - 695	17236	Leu-47 to Asp-61.		S0114: 1 and L0604: 1. 11q23.3
HSAVP56	733616	7485	3 - 206	17237			S0114: 1 and L0748: 1.
HSAVO05	932579	7486	35 - 253	17238	Ser-26 to Cys-33, Gly-53 to Pro-62.		S0114: 1 and L0773: 1.
HSAVN72	574129	7487	3 - 296	17239			S0114: 1 and L0748: 1.
HSAVN48	526505	7488	1 - 144	17240			S0114: 1
HSAVN24	574106	7489	2 - 112	17241	Glu-1 to Trp-16, His-18 to Ser-26.		S0114: 1
HSAVK84	783183	7490	127 - 246	17242			S0114: 1 and L0748: 1.
HSAV784	783182	7491	84 - 233	17243			L0748: 3, S0114: 1, L0740: 1 and L0749: 1.
HSAV153	728361	7492	1 - 219	17244	Lys-1 to Leu-25.		L0605: 2 and S0114: 1.
HSAVG96	796544	7493	86 - 238	17245			S0114: 1 and L0598: 1.
HSAVF17	664515	7494	221 - 313	17246	Asn-19 to Phe-24.		S0114: 1, L0766: 1, L0665: 1 and L0748: 1.
HSAVE61	742076	7495	238 - 447	17247	Gly-43 to Ser-57.		S0114: 1 and L0599: 1.
HSAVA79	781800	7496	1 - 111	17248	Val-2 to Gly-7.		S0114: 1 and L0731: 1.
HSAVA22	674977	7497	79 - 189	17249	Phe-17 to Gly-23.		S0114: 1, L0521: 1 and L0748: 1.
HSAUJ21	967609	7498	42 - 338	17250	Arg-13 to Gly-19.		S0114: 1 and L0766: 1.
HSAUW24	679279	7499	57 - 341	17251	Tyr-46 to Phe-51.		S0114: 1 and L0748: 1.
HSAUO25	679278	7500	315 - 659	17252	Asn-32 to Pro-40, Ser-49 to Cys-54.		L0748: 3, L0749: 3, L0596: 2 and S0114: 1.
HSAUQ81	866192	7501	49 - 309	17253			AR051: 41, AR050: 27,

	899273	9631	201 - 389	19383			AR054: 22 S0114: 1 and L0766: 1.	
HSAU054	750928	7502	161 - 373	17254			S0114: 1 and L0748: 1.	
HSAU044	716847	7503	61 - 201	17255		Pro-16 to Phe-22.	S0114: 1 and L0754: 1.	
HSAU184	908440	7504	3 - 302	17256		Ala-23 to Asp-28, Glu-53 to Tyr-60.	AR061: 1, AR089: 1 S0114: 1 and L0686: 1.	
HSAUK72	766240	7505	110 - 280	17257		Pro-11 to Ser-17.	S0114: 1 and L0591: 1.	
HSAUK48	883205	7506	2 - 238	17258		Pro-5 to Gly-15, Ala-35 to Glu-40.	S0114: 1 and L0750: 1.	
HSAUI23	422961	7507	485 - 129	17259			L0789: 2, S0114: 1, L0748: 1 and L0599: 1.	
	843427	9632	405 - 608	19384		Leu-3 to Gly-11, Glu-14 to Ala-21.		
HSAUH06	954543	7508	2 - 211	17260			S0114: 1 and L0599: 1.	
HSAUH02	917314	7509	3 - 224	17261			S0114: 1, L0749: 1 and L0589: 1.	
HSAUG74	765859	7510	358 - 483	17262			S0114: 1, L0740: 1 and L0747: 1.	
HSAUD02	920827	7511	37 - 237	17263			S0114: 1 and L0748: 1.	
HSAUB69	514840	7512	179 - 406	17264		Gly-15 to Lys-20.	S0114: 1	
	567319	9633	50 - 229	19385				
HSAUB39	705677	7513	157 - 357	17265		Lys-23 to Thr-35.	S0114: 1 and L0748: 1.	
HSAU281	778268	7514	101 - 268	17266		Glu-31 to Tyr-43.	L0745: 2 and S0114: 1.	
HSAU222	674986	7515	3 - 401	17267		Pro-94 to Arg-108.	L0779: 4, L0758: 2, S0114: 1 and L0749: 1.	
HSAUW91	790394	7516	223 - 333	17268			S0114: 1 and L0748: 1.	
HSAUW51	725879	7517	284 - 529	17269		Leu-12 to Lys-31.	S0114: 1 and L0740: 1.	
HSAU96	843424	7518	526 - 681	17270			S0114: 1 and L0748: 1.	
HSAU25	866949	7519	2 - 184	17271		Lys-36 to Ile-41, Val-56 to Lys-61.	S0114: 1, L0766: 1 and L0779: 1.	
HSAUQ55	732406	7520	57 - 350	17272		Asn-3 to Ser-8, Asn-16 to His-24, Phe-42 to Gly-48, Arg-71 to Lys-81, Gly-88 to Gly-98.	S0114: 1 and L0748: 1.	

HSATM64	862436	7521	356 - 640	17273	Gly-1 to Gly-8, Ser-26 to Ala-39, Ser-52 to Arg-58, Ser-63 to Leu-71, Ala-90 to Ser-95.	L0747: 3, L0756: 2, S0114: 1 and L0750: 1.	
HSATM19	866954	7522	281 - 448	17274		S0114: 1 and L0748: 1.	
HSATM09	456326	7523	42 - 176	17275		S0114: 1 and L0599: 1.	
HSATL02	920825	7524	3 - 227	17276		L0518: 3 and S0114: 1.	
HSATL58	866955	7525	124 - 429	17277	Arg-1 to Asn-8, Glu-10 to Asp-16.	S0114: 1 and L0509: 1.	
HSATE53	728414	7526	224 - 448	17278	Pro-51 to Pro-58.	L0748: 3 and S0114: 1.	
HSATC79	602167	7527	269 - 424	17279	Ser-14 to Thr-23.	S0114: 1 and L0600: 1.	
HSATC72	761511	7528	219 - 332	17280	Asp-14 to Thr-20.	L0731: 2 and S0114: 1.	
HPSAD92	790524	7529	77 - 298	17281		H0074: 1 and L0748: 1.	
HPSAB26	429558	7530	142 - 282	17282	Asp-1 to Gly-7, Pro-41 to Gln-47.	H0074: 1	
HPSAB24	518747	7531	171 - 341	17283	Pro-5 to Ala-13, Pro-15 to Thr-24.	H0074: 1	
HPSAB15	503600	7532	126 - 401	17284		L0748: 2, L0749: 2 and H0074: 1.	
HPSAA94	793000	7533	356 - 75	17285		H0074: 1	
HPSAA93	867387	7534	2 - 178	17286		H0074: 1	
HPSAA91	503543	7535	275 - 6	17287	Ser-31 to Pro-37, Pro-52 to Trp-60, Leu-66 to Leu-71.	H0074: 1	
HPSAA75	503544	7536	317 - 138	17288		H0074: 1 and L0748: 1.	
HPSAA41	503569	7537	257 - 355	17289	Leu-1 to Asn-11.	H0074: 1	
HPSAA30	503567	7538	29 - 253	17290	Val-19 to Met-29.	L0766: 3 and H0074: 1.	
HPSAA03	960941	7539	529 - 362	17291		H0074: 1	
HNNTA24	911178	7540	189 - 596	17292	Leu-98 to Ala-105, Pro-120 to Gly-127.	AR050: 87, AR054: 77, AR051: 70 H0679: 1	
	972489	9634	182 - 589	19386	Leu-98 to Ala-105, Pro-120 to Gly-127.		
HNHPF67	859817	7541	191 - 475	17293		S0216: 1 and L0748: 1.	
HNHPD68	974350	7542	13 - 252	17294	Thr-1 to His-12.	S0216: 1	

HNHOX01	915303	7543	3 - 176	17295	Glu-12 to Ser-18, Arg-24 to Pro-35, Pro-43 to Arg-49.	S0216: 1	
HNHOV24	974344	7544	138 - 278	17296	Lys-21 to Pro-27, Arg-41 to Thr-47.	L0532: 1 and S0216: 1.	
HNHOQ36	859824	7545	108 - 473	17297	Ala-47 to Gly-52, Pro-87 to Ser-98.	L0493: 2 and S0216: 1.	
HNHOP92	790911	7546	2 - 256	17298	Gly-1 to Ser-7, Glu-9 to Asp-18.	S0216: 1 and L0589: 1.	
HNHOP88	974327	7547	3 - 215	17299	Gln-43 to His-51.	S0216: 1	
HNHOP32	974330	7548	293 - 445	17300	Ser-61 to Pro-72.	S0216: 1	
HNHOI63	838790	7549	103 - 336	17301	Asn-1 to Asn-10,	L0521: 1 and S0216: 1.	
HNHOI07	952285	7550	167 - 358	17302	Glu-12 to Val-20, Trp-29 to Gly-39, Ser-33 to Thr-60.	S0216: 1 and L0592: 1.	
HNHOP94	948720	7551	2 - 508	17303	Pro-94 to Ser-102.	AR051: 25, AR050: 24, AR054: 20, AR089: 17, AR061: 9, S0216: 1	
HNHNT20	773683	7552	133 - 279	17304	Ile-1 to Ser-16.	S0216: 1 and L0599: 1.	6p24
HNHNQ08	958377	7553	148 - 429	17305		S0216: 1 and L0748: 1.	134570
HNHNP81	928378	7554	143 - 514	17306		AR051: 23, AR054: 11, AR050: 9, AR061: 8, AR089: 5, S0216: 1	
HNHNPP6	918684	7555	3 - 326	17307		S0216: 1	
HNHNQ01	915358	7556	200 - 367	17308	Val-2 to Thr-12.	S0216: 1 and L0749: 1.	
HNHNK39	950971	7557	249 - 88	17309	Leu-33 to Ser-40.	S0216: 1 and L0750: 1.	
HNHNK02	918715	7558	225 - 512	17310		L0370: 1 and S0216: 1.	
HNHNJ24	859836	7559	146 - 403	17311		L0775: 1, S0216: 1, L0438: 1 and L0752: 1.	
HNHNJ09	800482	7560	223 - 483	17312	Ser-28 to Arg-33.	S0216: 1	
HNHNH51	974343	7561	1 - 255	17313		S0216: 1	
HNHND85	870121	7562	71 - 529	17314	Pro-21 to Ser-26, His-29 to Arg-35.	L0753: 2 and S0216: 1.	

HNHND81	974334	7563	2 - 229	17315	Pro-41 to Leu-50, Thr-87 to Arg-99, Thr-24 to Ser-29, Pro-31 to Thr-40, Leu-44 to Val-61.	S0216: 1	
HNHND07	952273	7564	186 - 320	17316		S0216: 1 and L0748: 1.	
HNHNB92	790945	7565	34 - 342	17317	Pro-47 to Gly-55.	S0216: 1 and L0777: 1.	
HNHNB85	783887	7566	149 - 322	17318		S0216: 1 and L0745: 1.	
HNHNB02	918709	7567	124 - 234	17319		S0216: 1 and L0748: 1.	
HNHNM249	859842	7568	220 - 426	17320		S0216: 1 and L0589: 1.	
HNHNM152	975207	7569	2 - 190	17321	Asn-7 to Ile-25, Ala-29 to His-41.	S0216: 1	
HNHMS26	975206	7570	155 - 286	17322	Ile-33 to Ser-41.	S0216: 1	
HNHMQ86	784986	7571	2 - 151	17323	Pro-1 to Thr-7.	S0216: 1 and L0731: 1.	
HNHMQ28	859847	7572	6 - 131	17324	Pro-26 to Tyr-31.		
HNHMF02	918649	7573	2 - 169	17325	Phe-1 to Phe-7, Lys-23 to Lys-30.	S0216: 1 and L0748: 1. S0216: 1 and L0758: 1.	
HNHLY58	859849	7574	571 - 323	17326			
HNHLW34	859850	7575	353 - 66	17327	Glu-9 to Lys-19.	L0365: 1 and S0216: 1.	
HNHLW10	963542	7576	16 - 213	17328	Lys-8 to Cys-14.	S0216: 1 and L0438: 1. S0216: 1 and L0361: 1.	
HNHLR36	859851	7577	402 - 587	17329		L0520: 1 and S0216: 1.	
HNHLQ07	952279	7578	387 - 566	17330		L0749: 3 and S0216: 1.	
HNHLG36	855071	7579	335 - 556	17331		L0659: 1, L0663: 1, S0216: 1 and L0601: 1.	
HNHLD70	756668	7580	3 - 221	17332	Ser-10 to Thr-21, Pro-23 to Asn-34, Leu-42 to Thr-51.	S0216: 1 and L0592: 1.	
HNHLC01	915363	7581	277 - 519	17333		L0385: 1 and S0216: 1.	
HNHLB03	923091	7582	2 - 256	17334	Ala-17 to Cys-32, Glu-38 to Lys-47, Ser-58 to Ala-64, Arg-66 to Trp-72.	L0741: 4 and S0216: 1.	
HNHKT86	785104	7583	379 - 44	17335		L0439: 2 and S0216: 1.	
HNHRQ50	723868	7584	84 - 434	17336		L0748: 2, L0766: 1, S0216: 1 and L0779: 1.	

HNHRP03	923276	7585	350 - 679	17337	Pro-20 to His-29	L0758: 3 and S0216: 1.
HNHK161	859925	7586	335 - 505	17338		L0766: 1, S0216: 1 and L0740: 1.
HNHIS54	730706	7587	189 - 1	17339		S0053: 1 and L0439: 1.
HNHR83	781195	7588	36 - 284	17340		S0053: 1 and L0439: 1.
HNHC85	784345	7589	137 - 442	17341	Asp-1 to Pro-11, Gly-27 to Cys-34.	S0053: 1, L0748: 1 and L0749: 1.
HNHHL58	736064	7590	136 - 501	17342	Ile-2 to Arg-8, Phe-21 to Gln-30.	S0053: 1 and L0596: 1.
HNHHG53	830068	7591	172 - 336	17343		S0053: 1 and L0591: 1.
HNHHP86	784698	7592	168 - 383	17344		S0053: 1
HNHHP61	741836	7593	86 - 316	17345		S0053: 1
HNHHP52	726576	7594	101 - 292	17346	Thr-35 to Pro-40.	S0053: 1
HNHHP39	705407	7595	149 - 346	17347	Glu-16 to Pro-21, Pro-30 to Pro-36, Arg-47 to Ser-58, Leu-60 to Lys-65.	S0053: 1
HNHHP38	709278	7596	41 - 184	17348	Ile-38 to Pro-47.	S0053: 1
HNHHP37	708714	7597	2 - 229	17349		S0053: 1
HNHHP28	694365	7598	3 - 227	17350	Glu-5 to Pro-14.	S0053: 1 and L0600: 1.
HNHHP13	657245	7599	138 - 55	17351	Pro-1 to Lys-12, Lys-18 to Leu-24.	S0053: 1
HNHHP03	924221	7600	101 - 193	17352	Ser-10 to Val-16.	S0053: 1
HNHHC61	741839	7601	89 - 196	17353	Pro-1 to Gln-8.	L0758: 2, S0053: 1 and L0602: 1.
HNHGX61	948731	7602	136 - 291	17354	Pro-26 to Lys-34, Pro-47 to Gln-52.	S0053: 1 and L0589: 1.
HNHGV62	743400	7603	1 - 228	17355	Ser-61 to Pro-70.	S0053: 1
HNHGU56	859953	7604	117 - 440	17356		L0369: 1 and S0053: 1.
HNHGT92	496480	7605	12 - 164	17357		S0053: 1
HNHGT84	781977	7606	110 - 307	17358		S0053: 1
HNHGT80	775409	7607	45 - 260	17359	Gln-8 to Lys-14, Arg-20 to Gln-25.	S0053: 1
HNHGT15	660304	7608	144 - 311	17360	Ser-13 to Gln-27.	L0589: 2 and S0053: 1.
HNHGT09	625615	7609	1 - 243	17361	Thr-2 to Asp-10.	S0053: 1

HNHGS24	677228	7610	350 - 748	17362	Asp-16 to Ile-21, Ile-25 to Lys-36.	L0749: 3, L0748: 2 and S0053: 1.		
HNHGO45	582523	7611	547 - 879	17363	Cys-51 to Ser-57, Arg-68 to His-77, Asn-93 to His-102.	L0748: 2 and S0053: 1.	11p15.5-p15.4	125852, 126452, 126452, 130650, 141900, 141900, 141900, 141900, 141900, 141900, 142000, 142000, 142200, 142250, 142270, 150000, 176730, 176730, 176730, 190020, 191290, 192500, 192500, 194071, 194071, 204500, 257200, 257200, 600856, 601680, 602631, 602631
HNHGN27	859972	7612	3 - 314	17364	Glu-5 to Ser-14, Pro-22 to Cys-27.	L0758: 2 and S0053: 1.		
HNHGI60	740396	7613	159 - 488	17365	Glu-92 to Lys-103.	L0745: 4 and S0053: 1.		
HNHGI03	923829	7614	1 - 309	17366	Glu-92 to Lys-103.	S0053: 1		
HNHGH83	781208	7615	2 - 241	17367	Ala-8 to Leu-13, Lys-26 to Val-32.	S0053: 1 and L0592: 1.		
HNHGH22	859983	7616	3 - 251	17368	His-1 to Thr-7, Glu-28 to Asn-37.	S0053: 1 and L0748: 1.		
HNHGG39	561093	7617	117 - 329	17369		AR051: 10, AR050: 10, AR054: 9		
HNHGF28	686735	7618	18 - 443	17370	Pro-5 to Gly-12.	S0053: 1 and L0361: 1.		
HNHGE91	790212	7619	3 - 242	17371	Glu-18 to Ser-29, Val-31 to Arg-41, Gly-47 to Phe-54.	S0053: 1 and L0740: 1.		
HNHGE81	777955	7620	44 - 295	17372	Lys-29 to Trp-40.	S0053: 1		

HNHGE79	775214	7621	107 - 286	17373	Glu-29 to Asp-35.	S0053: 1	
HNHGE68	753052	7622	1 - 174	17374	Gly-1 to Ser-7, Thr-12 to Lys-19, Thr-50 to Glu-59.	S0053: 1	
HNHGE44	683294	7623	1 - 339	17375	L0589: 3 and S0053: 1.		
HNHGE31	698046	7624	59 - 169	17376	S0053: 1		
HNHGE24	677234	7625	50 - 154	17377	S0053: 1		
HNHGE12	970722	7626	1 - 396	17378	Pro-16 to Tyr-24, Gly-1 to Arg-17, Ser-24 to Cys-33, Thr-78 to Arg-88.	S0053: 1	
HNHGD08	959494	7627	1 - 249	17379	Ala-24 to Glu-30.	S0053: 1 and L0603: 1.	
HNHGC92	792740	7628	109 - 285	17380	Asn-22 to Lys-31.	S0053: 1	
HNHGC91	790199	7629	103 - 225	17381	Ser-1 to Glu-9, Pro-15 to Thr-27, His-29 to Tyr-39.	S0053: 1	
HNHGC45	720747	7630	3 - 359	17382	Cys-20 to Ile-27, Thr-45 to Gly-51, Gly-93 to Gly-101.	L0617: 1, L0157: 1 and S0053: 1.	
HNHGC32	699286	7631	1 - 192	17383	Lys-36 to Tyr-41.	S0053: 1	
HNHGC21	670949	7632	58 - 423	17384	Gln-80 to Leu-87.	S0053: 1	
HNHGC20	859991	7633	14 - 247	17385	Arg-5 to Glu-10.	S0053: 1	
HNHGC19	668692	7634	2 - 250	17386		S0053: 1	
HNHGC08	962224	7635	53 - 271	17387	Gln-11 to Asp-19.	S0053: 1	
HNHGC07	953414	7636	44 - 328	17388	Ser-14 to Leu-20, Arg-62 to Gly-68.	S0053: 1	
HNHGB12	970726	7637	377 - 676	17389		L0761: 1, S0053: 1 and L0758: 1.	
HNHGA53	973803	7638	111 - 260	17390		S0053: 1	
HNHFY68	752305	7639	3 - 188	17391	Asp-19 to Glu-28, Ser-38 to Arg-44, Gly-51 to Lys-62.	S0053: 1 and L0592: 1.	
HNHFY08	959475	7640	287 - 448	17392		L0365: 1 and S0053: 1.	
HNHFEX10	961275	7641	55 - 222	17393	Gln-20 to Glu-26, Ser-32 to Glu-47.	S0053: 1	
HNHFEX08	959484	7642	33 - 218	17394	Ala-9 to Asn-17.	S0053: 1 and L0592: 1.	
HNHFEX07	953403	7643	111 - 314	17395	Tyr-17 to His-22.	S0053: 1 and L0779: 1.	



HNHFV49	975415	7644	520 - 768	17396		AR061: 12, AR089: 5 S0053: 1	
HNHFV30	566339	7645	2 - 151	17397	Pro-23 to Trp-32.	AR051: 103, AR050: 100, AR054: 83 S0053: 1	
HNHFU64	937179	7646	264 - 467	17398	Pro-37 to Ala-47.	AR051: 11, AR061: 3, AR089: 2, AR050: 2, AR054: 1 S0053: 1	
HNHFU56	733513	7647	155 - 352	17399	Gln-6 to Ser-15, Pro-17 to Ala-29.	S0053: 1 and L0748: 1.	
HNHFU12	970882	7648	220 - 387	17400		S0053: 1 and L0608: 1.	
HNHFR69	757646	7649	256 - 429	17401		S0053: 1 and L0589: 1.	
HNHFP94	888666	7650	3 - 287	17402	Lys-47 to Pro-54.	AR051: 88, AR050: 84, AR054: 67 S0053: 1	
HNHFP89	786967	7651	129 - 284	17403		S0053: 1 and L0745: 1.	
HNHFP03	924606	7652	1 - 204	17404	Pro-23 to Gly-29.	L0766: 1 and S0053: 1.	
HNHFM74	506283	7653	1 - 270	17405	Gly-12 to Trp-17.	S0053: 1	
HNHFM54	486847	7654	341 - 514	17406	Lys-1 to Asp-9, Lys-15 to Glu-21, Glu-29 to Gly-34.	S0053: 1	
HNHFL96	490923	9635	631 - 329	19387			
HNHFL28	576414	7655	160 - 495	17407	Ser-1 to Lys-10, Gly-16 to Gly-27.	S0053: 1	
HNHHP24	973273	7656	347 - 469	17408	Ser-30 to Gly-38.	S0053: 1	
HNHHP24	903741	7657	28 - 480	17409	His-8 to Gly-18, Ala-39 to Gly-45, Pro-94 to Glu-101.	AR054: 20, AR050: 15, AR061: 7, AR089: 4, AR051: 1 S0053: 1	
HNHHP23	675942	7658	75 - 734	17410	Val-24 to Glu-29, Ser-62 to Ser-68, Ala-75 to Ser-81, Lys-138 to Phe-145.	L0740: 2 and S0053: 1.	
HNHFF79	638126	7659	153 - 281	17411		AR051: 21, AR050: 8 S0053: 1	

HNHFF30	692811	7660	2 - 178	17412	Asn-37 to Cys-43, Gly-50 to Phe-57.	S0053: 1 and L0748: 1.
HNHFF01	916782	7661	186 - 308	17413		L0758: 2 and S0053: 1.
HNHFD68	576448	7662	1 - 147	17414	Pro-19 to Gly-32.	AR050: 7, AR054: 6, AR051: 3 S0053: 1
HNHFB21	842707	7663	9 - 125	17415	Arg-10 to Thr-20.	S0053: 1
HNHEW83	781217	7664	256 - 498	17416	Lys-2 to Thr-8, Ser-12 to Trp-25, Trp-33 to Cys-39.	L0748: 2 and S0053: 1.
HNHEW18	666524	7665	54 - 197	17417		S0053: 1, L0438: 1 and L0748: 1.
HNHEU20	668909	7666	72 - 275	17418		S0053: 1 and L0740: 1.
HNHEQ03	535701	7667	68 - 277	17419	Gly-34 to Ser-41.	S0053: 1
	535815	9636	68 - 277	19388	Gly-34 to Ser-41.	
	923484	9637	74 - 283	19389	Gly-34 to Ser-41.	
HNHEP86	490390	7668	505 - 278	17420	Glu-1 to Ser-9, Lys-14 to Leu-20, Asp-44 to Gly-57.	S0053: 1
	785285	9638	71 - 364	19390	Gln-1 to Ala-13, Pro-52 to Gly-57, Leu-84 to Gln-90, Pro-92 to Asp-98.	
HNHEL72	760706	7669	18 - 164	17421		S0053: 1 and L0589: 1.
HNHEL34	706636	7670	248 - 553	17422	Gln-12 to Met-20, Pro-26 to Gly-31, Phe-39 to Asn-44, Gln-50 to Thr-64.	L0439: 2, S0053: 1 and L0751: 1.
HNHEL27	506284	7671	114 - 380	17423	Arg-11 to Asn-20.	S0053: 1
HNHEK69	757649	7672	244 - 402	17424		S0053: 1 and L0439: 1.
HNHEI78	800165	7673	20 - 154	17425		S0053: 1
HNHEJ20	669763	7674	305 - 472	17426	Ser-1 to Trp-15.	S0053: 1 and L0439: 1.
HNHEI90	888553	7675	22 - 168	17427	Arg-25 to Gln-34.	AR054: 16, AR050: 12, AR051: 8 S0053: 1
HNHEI37	419752	7676	35 - 205	17428	Pro-46 to Met-51.	L0766: 1 and S0053: 1.

HNHEH28	973296	7677	22 - 198	17429	Arg-5 to His-11, Thr-13 to Cys-22, Cys-50 to Thr-55.	L0617: 1 and S0053: 1.
HNHEG71	760464	7678	23 - 190	17430	Leu-7 to Asp-17, Gly-19 to His-27, Pro-33 to Glu-49.	S0053: 1
HNHEE53	576417	7679	201 - 362	17431	Met-18 to Cys-23.	S0053: 1
HNHEP08	958854	7680	493 - 230	17432	Ser-46 to Ser-51.	S0053: 1
HNHEE03	924619	7681	351 - 485	17433		S0053: 1 and L0759: 1.
HNHED88	576529	7682	3 - 206	17434		AR051: 22, AR054: 15, AR050: 11 S0053: 1
HNHED18	666594	7683	450 - 599	17435	Ser-17 to Asp-23, Ile-32 to Arg-58.	L0749: 2, S0053: 1 and L0748: 1.
HNHED25	973295	7684	109 - 330	17436	Thr-50 to Gly-55.	S0053: 1
HNHEDY14	542062	7685	151 - 396	17437		AR054: 14, AR051: 1, AR050: 1 S0053: 1 and L0759: 1.
HNHDX57	734933	9640	156 - 380	19392		S0053: 1 and L0752: 1.
HNHDX30	692875	7687	302 - 454	17439		S0053: 1 and L0748: 1.
HNHDX94	883870	7688	257 - 568	17440	Lys-8 to Pro-17, Leu-92 to Ala-99.	L0509: 1 and S0053: 1.
HNHDXW16	422903	7689	246 - 1	17441		L0589: 2 and S0053: 1.
	661809	9641	91 - 339	19393	Arg-1 to Ser-17, Arg-35 to Ser-40, Gly-64 to Leu-74.	
HNHDXV95	559341	7690	67 - 288	17442	Ala-19 to Leu-25.	AR054: 15, AR050: 3 S0053: 1
HNHDXV93	860083	9642	58 - 279	19394	Ala-19 to Leu-25.	
HNHDXV16	792467	7691	2 - 349	17443		L0748: 4 and S0053: 1.
	863116	7692	185 - 3	17444	Thr-30 to Thr-51.	AR051: 28, AR050: 23, AR054: 20 S0053: 1
HNHDXT83	974277	7693	55 - 198	17445		S0053: 1

HNHDT33	576483	7694	2 - 166	17446				S0053: 1		
HNHDT32	573332	7695	3 - 122	17447	Ser-12 to Lys-24, Lys-29 to Arg-35.			S0053: 1		
HNHDT19	573355	7696	2 - 130	17448	Ser-20 to Pro-26.			S0053: 1		
HNHDT12	576464	7697	3 - 92	17449				S0053: 1		
HNHDT05	932223	7698	2 - 382	17450	Gly-14 to Arg-26, Thr-43 to Arg-58, Pro-63 to Gly-71, Lys-80 to Gly-95.			S0005: 2, S0053: 1 and L0589: 1.		
HNHDM15	660509	7699	215 - 427	17451	Thr-40 to Ser-46, Pro-48 to Pro-58, Ser-65 to Glu-70.			L0747: 2 and S0053: 1.		
HNHDM40	574312	7700	74 - 319	17452				S0053: 1		
HNHDM03	924895	7701	68 - 334	17453	Gln-1 to Leu-12, Ser-16 to His-21.			S0053: 1		
HNHDM07	953883	7702	92 - 379	17454				S0053: 1 and L0361: 1.		
HNHDM52	520297	7703	241 - 71	17455	Pro-49 to Lys-57.			AR050: 2, AR051: 0 S0053: 1		
HNHDM29	904546	7704	24 - 215	17456	Gly-1 to Gly-15, Gly-18 to His-26, Pro-43 to Gly-62.		17q21	S0053: 1		109270, 109270, 109270, 109270, 109270, 113705, 113705, 144200, 148065, 148066, 148066, 148067, 148067, 148069, 148080, 154275, 168610, 171190, 176705, 185800, 200350, 221820, 232200, 249000, 252920, 253250, 600119, 600119, 601363, 601844,
HNHDM89	757760	7705	207 - 416	17457				S0053: 1 and L0756: 1.		
HNHDM84	782897	7706	317 - 105	17458				S0053: 1		
	782898	9643	99 - 290	19395	Val-36 to Gly-43.					

	782939	9644	453 - 265	19396	Thr-5 to Glu-11, Lys-28 to Arg-36.		
HNHCY96	796547	7707	428 - 697	17459	Thr-72 to Pro-77, Pro-82 to Phe-87.	S0053: 1	
HNHCY07	953878	7708	49 - 339	17460	Pro-1 to Val-7, Asp-19 to Tyr-25, Lys-39 to Phe-46.	S0053: 1 and L0780: 1.	
HNHCY06	936061	7709	40 - 150	17461		S0053: 1 and L0759: 1.	
HNHCJ08	959944	7710	154 - 294	17462		S0053: 1 and L0599: 1.	
HNHC094	796745	7711	145 - 267	17463		S0053: 1 and L0600: 1.	
HNHC069	754189	7712	12 - 362	17464		S0053: 1 and L0777: 1.	
HNHC039	705641	7713	55 - 294	17465	Arg-18 to Val-23.	S0053: 1 and L0592: 1.	
HNHC069	757751	7714	196 - 366	17466	Cys-8 to Cys-16.	S0053: 1 and L0748: 1.	
HNHC111	964952	7715	89 - 211	17467	Leu-9 to Trp-14.	S0053: 1	
HNHC132	861673	7716	183 - 593	17468	Lys-17 to Thr-23, His-95 to Thr-101.	AR051: 23, AR050: 14, AR061: 10, AR054: 4, AR089: 3 S0053: 1	
	956105	9645	963 - 553	19397	Lys-17 to Thr-23, His-95 to Thr-101.		
HNHC043	574074	7717	10 - 168	17469	Thr-31 to Gly-37.	S0053: 1	
HNHC032	574080	7718	90 - 161	17470	Ser-6 to Lys-14.	S0053: 1	
HNHC033	702679	7719	488 - 655	17471		L0748: 6 and S0053: 1.	
HNHC027	668255	7720	268 - 465	17472		AR054: 16, AR051: 16, AR050: 3 S0053: 1	
HNHBZ39	860113	7721	114 - 284	17473		AR054: 19, AR050: 18, AR051: 13 S0053: 1	
HNHBX96	796539	7722	61 - 252	17474	Thr-8 to Phe-18, Ser-23 to Asn-34, Ala-37 to Leu-46.	S0053: 1 and L0748: 1.	
HNHBW54	583752	7723	186 - 299	17475		S0053: 1	
	840101	9646	235 - 2	19398	Arg-1 to Ala-9, Phe-18 to Asp-27.		
HNHB002	920662	7724	74 - 280	17476		S0053: 1 and L0589: 1.	

HNHB078	574093	7725	2 - 160	17477		S0053: 1	
HNHBK57	490789	7726	296 - 60	17478		S0053: 1	
	513489	9647	2 - 211	19399			
HNHB148	860125	7727	243 - 533	17479		S0053: 1	
HNHB102	918387	7728	686 - 474	17480		S0053: 1	
	919069	9648	314 - 3	19400	His-34 to Ser-44, Cys-80 to Glu-86, Pro-95 to Gly-101.		
HNHBG42	714044	7729	241 - 351	17481	Arg-21 to Glu-30.	S0053: 1, L0740: 1 and L0777: 1.	
HNHBF78	773747	7730	76 - 300	17482		S0053: 1 and L0589: 1.	
HNHBF47	949027	7731	923 - 501	17483	His-1 to Thr-14.	AR051: 11, AR054: 8, AR050: 7, AR061: 1, AR089: 0	1
HNHBE75	766526	7732	82 - 243	17484	Cys-3 to Leu-20.	S0053: 1	
HNHBD73	764293	7733	259 - 134	17485	His-1 to Tyr-7, Ser-17 to Gly-24.	L0439: 2 and S0053: 1.	
HNHBC77	772452	7734	67 - 273	17486		S0053: 1 and L0750: 1.	
HNHAP69	574295	7735	58 - 270	17487	Asn-2 to Arg-9.	S0053: 1	
HNHAP55	574386	7736	2 - 163	17488	Ala-1 to His-11.	S0053: 1	
HNHAP32	574393	7737	99 - 281	17489		S0053: 1	
HNHAP08	959961	7738	132 - 239	17490		S0053: 1	
HNHAM81	574402	7739	1 - 90	17491	Asn-20 to Glu-30.	S0053: 1	
HNHAM80	574404	7740	56 - 160	17492		S0053: 1	
HNHAM33	571334	7741	3 - 95	17493	Thr-1 to Lys-6, Leu-22 to Leu-30.	L0633: 3 and S0053: 1.	
HNHAK41	890594	7742	2 - 166	17494		AR050: 14, AR051: 12, AR054: 2	
HNHAI41	712605	7743	66 - 233	17495		S0053: 1	
HNHAI07	954088	7744	1 - 168	17496	Arg-1 to Asp-16, Leu-27 to Gly-32.	L0743: 3 and S0053: 1. L0761: 1 and S0053: 1.	
HNHAF61	742116	7745	189 - 686	17497	Pro-5 to Trp-10, Glu-62 to Gly-67, Ala-124 to Asn-129.	AR061: 6, AR089: 3 L0438: 2, L0439: 2, L0752: 2, L0365: 1 and S0053: 1.	

	955094	9649	378 - 1	19401	Thr-56 to Pro-64, Pro-77 to Thr-87, Thr-95 to Glu-100, Asp-112 to Thr-118.	
HNHAE19	527975	7746	429 - 112	17498	Arg-24 to Lys-37, Ser-59 to Pro-70.	L0766: 5, L0788: 1, S0053: 1 and L0747: 1.
HNHAB36	596822	7747	913 - 653	17499	Arg-19 to Arg-26, Gly-44 to Thr-55, Glu-68 to His-75, Trp-82 to Asp-87.	S0053: 1
	946365	9650	199 - 2	19402	Thr-6 to Cys-17,	
	946634	9651	3 - 170	19403	Gly-23 to Gly-28, Cys-1 to Ser-6.	S0053: 1
HNHAB15	973675	7748	420 - 623	17500	Glu-1 to Ser-6,	S0428: 1 and L0600: 1.
HNGPR43	860142	7749	2 - 304	17501	Asp-30 to Lys-35.	S0428: 1
HNGPP74	974046	7750	303 - 557	17502	Pro-16 to Ala-31, Pro-59 to Gly-85, Pro-87 to Pro-96.	AR061: 4, AR089: 1 S0428: 1
HNGPN54	947104	7751	478 - 113	17503	Arg-1 to Lys-6, Ile-14 to Asn-22.	S0428: 1
HNGPM65	972821	7752	64 - 270	17504		AR061: 7, AR089: 3 L0766: 1, S0428: 1 and L0592: 1.
HNGPL75	950134	7753	870 - 559	17505		S0428: 1
HNGPL05	974049	7754	43 - 270	17506		S0428: 1 and L0589: 1.
HNGPI87	860162	7755	229 - 426	17507		S0428: 1
HNGPH83	974045	7756	1 - 147	17508	Tyr-4 to Ile-16.	S0428: 1
HNGOZ40	969158	7757	13 - 330	17509	Gln-5 to Phe-15, Pro-32 to Ala-39, Pro-49 to Trp-67.	S0428: 1 and L0588: 1.
HNGOV68	860169	7758	2 - 343	17510	Gly-21 to Leu-30, Pro-51 to Ser-56, Thr-62 to Ala-67.	L0761: 1 and S0428: 1.
HNGOY32	954991	7759	243 - 590	17511		L0365: 1 and S0428: 1.
HNGOP63	973415	7760	126 - 557	17512	Pro-22 to Leu-30.	S0428: 1

HNGOP40	860182	7761	102 - 326	17513	Ser-7 to Ala-14, Arg-25 to His-31, Pro-48 to Gly-62, Gln-68 to Lys-75.	S0428: 1 and L0589: 1.	
HNGOQ88	860179	7762	95 - 271	17514		S0428: 1 and L0748: 1.	
HNGON56	974038	7763	520 - 738	17515	Glu-1 to Leu-11.	S0428: 1	
HNGON24	860183	7764	205 - 468	17516		L0369: 1 and S0428: 1.	
HNGOK04	972752	7765	3 - 611	17517	Thr-6 to Ser-13, Leu-52 to Gly-61, Arg-66 to Arg-72, Arg-131 to Pro-136, Arg-145 to Tyr-150, Gly-163 to Ser-168, Ala-186 to Gly-193.	S0428: 1	
HNGOF70	860195	7766	7 - 243	17518		L0766: 2 and S0428: 1.	
HNGNY72	860198	7767	167 - 385	17519	Met-20 to Gly-26.	L0385: 1 and S0428: 1.	
HNGNY16	806017	7768	312 - 590	17520	Pro-35 to Trp-43.	S0428: 1 and L0756: 1.	
HNGNY02	918626	7769	42 - 470	17521	Gln-1 to Gly-9, Gly-40 to Asn-53, Arg-67 to Gln-72, His-100 to Trp-107, Arg-135 to Pro-140.	L0385: 1, L0365: 1 and S0428: 1.	
HNGNX66	974035	7770	391 - 618	17522	Gly-1 to Val-30, Lys-37 to Glu-53.	S0428: 1	
HNGNU85	974037	7771	262 - 594	17523	Arg-27 to Ser-32.	S0428: 1	
HNGNS91	973432	7772	245 - 496	17524	Lys-30 to Asp-37.	S0428: 1	
HNGNN81	974124	7773	96 - 287	17525	Leu-3 to Gly-13, Ala-17 to Pro-26, Glu-44 to Lys-49.	S0428: 1	
HNGNN01	915226	7774	282 - 512	17526		S0428: 1 and L0758: 1.	
HNGNU46	860212	7775	135 - 470	17527	Leu-12 to Cys-19, Gln-27 to Asn-35.	L0779: 2, L0663: 1, S0428: 1 and L0747: 1.	
HNGNT78	860216	7776	186 - 380	17528	Pro-38 to Trp-44.	S0428: 1 and L0596: 1.	
HNGND75	974968	7777	169 - 450	17529	Pro-3 to Gln-13, Gly-39 to Cys-44, Thr-57 to Trp-66.	S0428: 1	



HNGND01	915294	7778				Thr-81 to Ser-87.			S0428: 1 and L0749: 1.
HNGNA49	974907	7779	446 - 580	17530					S0428: 1
HNGM191	974056	7780	371 - 592	17531					S0428: 1
HNGMW65	950173	7781	282 - 575	17532		Val-23 to Gly-29, Ser-48 to Cys-58.			AR089: 119, AR061: 16
HNGMT40	930430	7782	295 - 26	17533		Ile-26 to Thr-37.			S0428: 1
HNGMM11	966099	7783	2 - 151	17534					L0662: 1, S0428: 1 and L0759: 1.
HNGML12	934389	7784	40 - 375	17535		Pro-1 to Leu-13, Pro-19 to Pro-27.			S0428: 1 and L0777: 1.
HNGMF02	955660	7785	3 - 179	17536					L0761: 1, L0766: 1, S0428: 1 and L0756: 1.
HNGME04	927020	7786	394 - 642	17537					L0809: 2, L0783: 1, L0791: 1, S0428: 1, L0740: 1 and L0752: 1.
HNGMD92	790887	7787	200 - 592	17538					S0428: 1, L0748: 1 and L0749: 1.
HNGMD48	974358	7788	71 - 247	17539		Arg-39 to Asp-56.			S0428: 1 and L0361: 1.
HNGMCO1	915310	7789	215 - 400	17540					S0428: 1
HNGLY12	968919	7790	525 - 830	17541		Gln-50 to Ser-61.			L0747: 3 and S0428: 1.
HNGLY08	948825	7791	260 - 439	17542		Thr-8 to Leu-13, Glu-22 to Asn-32.			S0428: 1 and L0758: 1.
HNGLS90	787446	7792	81 - 425	17543		Asn-80 to Ser-86, Phe-98 to Glu-105.			AR051: 17, AR050: 9, AR054: 7
HNGLR54	972812	7793	253 - 438	17544		Ala-26 to Ala-31, Ser-57 to Arg-62.			S0428: 1
HNGLO21	974067	7794	314 - 508	17545		Pro-20 to Glu-25, Glu-55 to Ala-60.			S0428: 1, L0748: 1 and L0749: 1.
HNGLL07	952236	7795	165 - 479	17546		Pro-22 to Thr-28, Arg-35 to Pro-44.			S0428: 1
HNGLK36	974584	7796	3 - 146	17547					S0428: 1 and L0731: 1.
HNGKY10	963459	7797	402 - 557	17548		Gln-7 to Asp-21, Glu-27 to Gly-37.			S0428: 1
			58 - 156	17549					L0659: 1 and S0428: 1.

HNGK834	974368	7798	189 - 356	17550	Glu-36 to Pro-42.	S0428: 1
HNGK080	860306	7799	90 - 377	17551	Val-20 to Glu-27.	S0428: 1 and L0589: 1.
HNGK032	860307	7800	118 - 414	17552	Pro-4 to Ala-9, Val-18 to Trp-30, His-48 to Leu-59, Phe-91 to Asn-99.	S0428: 1, L0748: 1 and L0749: 1.
HNGKM74	942758	7801	2 - 988	17553	Phe-148 to Lys-155, Arg-162 to Glu-168, Arg-205 to Thr-213, Pro-235 to Leu-241.	AR051: 17, AR050: 17, AR061: 7, AR089: 3, AR054: 3 L0800: 1 and S0428: 1.
HNGKL24	974360	7802	319 - 540	17554	Gly-23 to Pro-28,	S0428: 1
HNGKJ02	918622	7803	375 - 647	17555	Pro-31 to Asp-36, Ala-38 to Trp-59, His-71 to Glu-76, Lys-79 to Glu-86.	S0428: 1 and L0731: 1.
HNGKH07	952210	7804	104 - 247	17556	Pro-2 to Thr-9.	L0655: 1 and S0428: 1.
HNGKG03	922036	7805	120 - 323	17557		L0518: 1 and S0428: 1.
HNGKD49	974364	7806	295 - 444	17558		S0428: 1
HNGKC69	834922	7807	137 - 418	17559	Lys-29 to Thr-40, Arg-58 to Leu-65, Gln-67 to Arg-80, Ser-85 to Asp-92.	AR051: 14, AR054: 4, AR050: 1 S0428: 1
HNGKC21	974581	7808	102 - 233	17560		S0428: 1
HNGKC06	934309	7809	3 - 431	17561	Ser-21 to Lys-29, Gln-31 to His-37.	S0428: 1 and L0758: 1.
HNGKA11	966117	7810	118 - 300	17562		L0787: 1, S0428: 1 and L0592: 1.
HNGJY82	778921	7811	305 - 439	17563	Gly-14 to Arg-21, Gln-31 to Glu-37.	S0052: 1 and L0592: 1.
HNGJR05	860357	7812	212 - 460	17564	Ser-16 to Asp-27, Arg-37 to Gly-44.	S0052: 1 and L0589: 1.
HNGJO96	796414	7813	37 - 282	17565	Thr-24 to Thr-29, Thr-42 to Lys-47, Ala-52 to Asn-64.	S0052: 1
HNGJO36	708121	7814	45 - 242	17566	Pro-46 to Gly-53.	S0052: 1

HNGJQ08	959511	7815	26 - 103	17567			S0052: 1
HNGJL47	720363	7816	3 - 404	17568	Arg-31 to Ser-37, Pro-39 to Pro-45.	L0771: 8, L0591: 2, L0788: 1 and S0052: 1.	
HNGJK64	746615	7817	22 - 147	17569	Ser-19 to Leu-26, Leu-30 to Gln-35.	S0052: 1	
HNGJK63	839947	7818	2 - 181	17570		S0052: 1 and L0758: 1.	
HNGJK40	711219	7819	138 - 380	17571	Thr-26 to Gly-31.	S0052: 1	
HNGJI40	711211	7820	2 - 385	17572	Ala-6 to Gly-11, Phe-21 to Leu-28, Cys-43 to Ile-53.	S0052: 1	
HNGJI04	615285	7821	3 - 164	17573	Gly-34 to Phe-41.	S0052: 1	
HNGJG75	942946	7822	90 - 662	17574	His-1 to Phe-14, Gln-18 to Arg-24, Ser-44 to His-49, Phe-121 to Asp-131, Ser-149 to Thr-174.	AR061: 4, AR089: 1 S0052: 1	
	951158	9652	469 - 251	19404		S0052: 1	
HNGJG35	422897	7823	393 - 253	17575		S0052: 1 and L0758: 1.	
HNGJE38	495689	7824	630 - 109	17576			
	860403	9653	95 - 379	19405	Pro-39 to Cys-52.		
HNGJE23	600366	7825	634 - 467	17577	Tyr-17 to Lys-22, Gly-46 to Thr-54.	S0052: 1	
	860413	9654	463 - 296	19406	Lys-6 to Leu-12.		
HNGJE08	973790	7826	392 - 547	17578	Pro-40 to Gln-50.	S0052: 1	
HNGJE01	973797	7827	392 - 529	17579		S0052: 1	
HNGJC68	888447	7828	103 - 348	17580		AR051: 86, AR050: 64, AR054: 54 S0052: 1	
HNGJC29	695660	7829	96 - 425	17581	Trp-1 to Arg-8, Gln-14 to Thr-21, Ser-39 to Gly-51, Arg-65 to Gln-72, Ser-80 to Gln-85, His-90 to Gly-96.	S0052: 1 and L0747: 1.	
HNGJB49	723004	7830	3 - 302	17582	His-7 to Gly-22, His-62 to Asn-71.	L0748: 5, S0052: 1 and L0749: 1.	

HNGJA75	888461	7831	95 - 256	17583	Thr-17 to Leu-26, Gly-47 to Gly-53.	AR051: 25, AR050: 16, AR054: 1 S0052: 1	
HNGIX71	760398	7832	3 - 293	17584	His-30 to Gln-37.	L0748: 2 and S0052: 1.	
HNGIW45	717698	7833	1 - 198	17585	Ser-46 to Lys-56.	S0052: 1	
HNGIS92	792748	7834	1 - 540	17586		S0052: 1 and L0439: 1.	
HNGIS70	757216	7835	373 - 621	17587	Ser-66 to Ser-73.	S0052: 1 and L0740: 1.	
HNGIS02	920221	7836	327 - 542	17588	Ser-15 to Lys-24.	L0769: 1 and S0052: 1.	
HNGIR10	964715	7837	317 - 496	17589	Pro-7 to Phe-12.	L0769: 3 and S0052: 1.	
HNGIQ78	772866	7838	112 - 324	17590	Asp-6 to Ser-20, Arg-46 to Phe-53, Pro-60 to Leu-67.	S0052: 1	
HNGIQ71	773431	9655	586 - 365	19407			
	495771	7839	487 - 176	17591	Ala-1 to Cys-7, Gln-21 to Gly-40, Pro-49 to Gly-54, Ser-72 to Trp-91.	S0052: 1	
HNGIP47	860306	9656	308 - 658	19408			
	720374	7840	247 - 450	17592	His-15 to Met-25.	S0052: 1 and L0589: 1.	
	860515	7841	210 - 476	17593		S0052: 1	
	487439	7842	231 - 401	17594	Ala-15 to Arg-22.	S0052: 1	
HNGIO52	927636	9657	396 - 280	19409			
	727196	7843	207 - 422	17595	Pro-15 to Arg-22.	S0052: 1 and L0756: 1.	
HNGIL94	793171	7844	123 - 326	17596		S0052: 1	
HNGIL84	781970	7845	50 - 340	17597		L0747: 2 and S0052: 1.	
HNGIL82	812699	7846	174 - 368	17598	Ile-3 to Trp-14, Glu-54 to Asn-65.	S0052: 1	
HNGIL51	725003	7847	1 - 249	17599	Gly-1 to Glu-8, Thr-37 to Arg-47, Pro-57 to Arg-62, Pro-78 to Thr-83.	S0052: 1	2p11.2 178640, 216900
HNGIL22	860525	7848	76 - 306	17600	Ala-1 to Thr-6.	L0527: 1 and S0052: 1.	
	868068	7849	178 - 348	17601	Thr-9 to Cys-14, Lys-38 to Arg-45.	L0752: 2 and S0052: 1.	
HNGHY44	973977	7850	245 - 424	17602	Asp-25 to Gly-32.	S0052: 1	

HNGH094	793271	7851	1 - 219	17603	Asn-1 to His-10, Pro-53 to Ala-72.	S0052: 1
HNGHM61	576221	7852	39 - 236	17604	Pro-4 to His-18, Pro-28 to Arg-39, Gln-53 to Gly-58.	S0052: 1
HNGHL46	860541	7853	291 - 476	17605		S0052: 1
HNGHJ01	916757	7854	1 - 204	17606	Gln-1 to Asp-9, Asp-19 to Gly-25, His-58 to Ala-65.	S0052: 1 and L0758: 1.
HNGHG39	860554	7855	3 - 248	17607	His-1 to Met-8.	S0052: 1 and L0366: 1.
HNGHD68	576315	7856	246 - 1	17608		S0052: 1
HNGGV02	920377	7857	212 - 430	17609		S0052: 1
HNGGT08	959649	7858	44 - 193	17610		S0052: 1 and L0748: 1.
HNGGP91	576251	7859	1 - 360	17611		L0743: 2 and S0052: 1.
HNGGP55	578450	7860	91 - 186	17612		S0052: 1
HNGGL74	765644	7861	828 - 487	17613	Tyr-21 to Tyr-26, His-36 to Lys-44, Leu-70 to Gly-76.	AR050: 136, AR054: 117, AR051: 105 S0052: 1
HNGGF86	860568	7862	247 - 426	17614	Thr-1 to His-11.	S0052: 1
HNGGB58	738213	7863	16 - 156	17615		S0052: 1 and L0754: 1.
HNGGB28	703315	7864	2 - 199	17616	Ala-1 to Ala-10, Pro-12 to Ser-19, Asp-31 to Gly-44, Pro-49 to Arg-66.	S0052: 1
HNGFX89	506492	7865	202 - 468	17617	Asn-13 to Ala-19.	AR050: 19, AR051: 15, AR054: 8 S0052: 1
	578679	9658	34 - 144	19410		
	578680	9659	529 - 413	19411		
HNGFX75	608695	7866	394 - 630	17618		S0052: 1
HNGFU33	702584	7867	472 - 663	17619	Gly-2 to Phe-8, Pro-17 to Asn-22, Met-56 to Gly-62.	L0747: 3, L0803: 2, L0659: 2, L0666: 2, L0662: 1, L0546: 1, S0052: 1, L0750: 1, L0779: 1, L0752: 1 and L0758: 1.
HNGFT02	920480	7868	212 - 319	17620		S0052: 1 and L0747: 1.

HNGFR06	935821	7869	2 - 421	17621	Leu-41 to Gln-52.	S0052: 1, L0439: 1 and L0754: 1.	
HNGFP92	842276	7870	439 - 621	17622	Gly-1 to Asp-7.	S0052: 1	
	889744	9660	140 - 442	19412	Ala-17 to Gly-22.		
					Thr-3 to Ala-33, Ala-44 to Cys-49, Phe-64 to Trp-71, Ala-84 to Arg-89, Ala-94 to Ser-101.		
HNGFN70	872950	7871	3 - 191	17623	Ser-10 to Asn-17, Gly-32 to Lys-44.	AR051: 41, AR050: 40, AR054: 33 S0052: 1	
HNGFM17	664280	7872	345 - 635	17624	Leu-11 to Gln-19, Gly-27 to Ala-36, Ser-45 to Ser-59.	S0052: 1 and L0748: 1.	
HNGFK34	703419	7873	1 - 309	17625	Thr-2 to Trp-9, Val-33 to Leu-38, Gly-43 to Cys-51.	L0518: 1 and S0052: 1.	
HNGFT11	967304	7874	1 - 285	17626	Gln-63 to Ser-68, Asp-75 to Pro-82.	L0517: 1 and S0052: 1.	
HNGFH90	789066	7875	45 - 317	17627	Gln-11 to Gln-16, Ser-24 to Arg-29, Ser-39 to Gly-45.	S0052: 1 and L0594: 1.	
HNGFH58	738240	7876	1 - 201	17628		L0748: 2 and S0052: 1.	
HNGFH30	823363	7877	2582 - 2280	17629	Lys-30 to Met-35, Pro-49 to Gly-56, His-72 to Ser-77, Ala-82 to Gly-92.	AR050: 17, AR054: 1 S0052: 1	
HNGFG10	824134	9661	227 - 649	19413	Lys-30 to Met-35, Pro-49 to Gly-56.		
	854048	9662	2 - 79	19414	Lys-1 to Leu-12.		
	968059	7878	800 - 1042	17630	Ser-64 to His-69.	L0747: 3, L0589: 2 and S0052: 1.	
HNGFF50	941480	7879	1 - 342	17631	Ala-3 to Thr-11, Ala-33 to His-43, Gly-67 to Leu-74.	S0052: 1	

HNGFE75	486855	7880	290 - 502	17632	Pro-96 to His-102, Glu-104 to Thr-114.			
	490615	9663	493 - 89	19415	Glu-39 to Gly-46, Ser-56 to Arg-64.		S0052: 1	
	871493	7881	108 - 470	17633	Leu-10 to Gln-17.		S0052: 1 and L0596: 1.	
HNGFE58					Pro-17 to Trp-22, Ile-26 to Gly-31, Ala-35 to Gly-46, Asp-49 to Gln-88, Met-105 to Pro-113.			
	927579	7882	101 - 250	17634	Trp-17 to Met-23, Gly-25 to Asn-40, Phe-43 to Arg-48.		L0775: 1 and S0052: 1.	
	666626	7883	102 - 395	17635	Ser-6 to Ser-13, Leu-20 to Pro-27.		S0052: 1, L0779: 1 and L0731: 1.	
HNGEX55	888324	7884	1 - 375	17636	Gly-1 to Trp-9, Gly-43 to Asp-57, Gly-64 to Trp-81.		AR050: 23, AR051: 19, AR054: 13 S0052: 1	
	868073	7885	248 - 460	17637	Glu-1 to Asp-9.		L2245: 1 and S0052: 1.	
	860615	7886	129 - 452	17638	Ala-1 to Ser-6, Pro-24 to His-36, Val-80 to Asn-88, Gly-94 to Gln-100.		L0773: 1 and S0052: 1.	
HNGEW38	964163	9664	569 - 159	19416	Pro-19 to Gln-25.			
	573234	7887	298 - 690	17639	Trp-7 to Pro-12, Leu-38 to Lys-44, Thr-69 to Arg-76, Leu-93 to Ser-99, His-115 to Ser-124.		S0052: 1 and L0742: 1.	123620, 188826, 600850, 601669
					Glu-6 to Lys-22, Ser-42 to Ser-55, Ser-58 to Ala-65.		L0754: 2 and S0052: 1.	
HNGEU20	669811	7888	320 - 535	17640	His-1 to Ile-16.		L0754: 2 and S0052: 1.	
	789373	7889	3 - 377	17641	Gln-1 to Ala-7.		S0052: 1	
	578910	7890	3 - 263	17642	Trp-15 to Thr-21.			
HNGER73	578909	7891	10 - 324	17643	Gly-11 to Pro-17,		S0052: 1	

HNGER62	578922	7892				Trp-31 to Trp-38, Ser-45 to Met-51.		
HNGER61	578907	7893	107 - 307	17644		Gln-6 to Arg-18.	S0052: 1	
			116 - 325	17645		Ser-16 to Thr-24, Ala-37 to Ser-49.	S0052: 1	
HNGER50	576479	7894	60 - 230	17646		Lys-8 to Cys-14.	S0052: 1	
HNGER38	578908	7895	1 - 138	17647		Gly-1 to Cys-7, Asp-23 to Gly-31, Cys-34 to Asn-40.	S0052: 1	
HNGER26	860623	7896	127 - 384	17648			S0052: 1	
HNGE079	951489	7897	200 - 640	17649		Gln-41 to Asp-48, Ser-67 to Leu-72, Thr-79 to Ser-84, Ile-96 to Ser-103, Arg-120 to Ser-127.	AR061: 46, AR089: 19, AR051: 12, AR054: 10, AR050: 9 S0052: 1 and L0758: 1.	
HNGEN04	586457	7898	30 - 302	17650		Arg-1 to Gly-13, His-19 to Gly-24.	AR050: 63, AR051: 54, AR054: 40 S0052: 1	
HNGEK57	734923	7899	92 - 307	17651			S0052: 1 and L0592: 1.	
HNGEK16	578914	7900	2 - 172	17652		Ala-1 to Asp-9.	S0052: 1	
HNGE144	800199	7901	13 - 345	17653		Pro-10 to Phe-15, Ala-59 to Pro-66, Pro-69 to Gln-85.	S0052: 1	
HNGEI11	967314	7902	121 - 276	17654			S0052: 1 and L0589: 1.	
HNGEG07	953658	7903	274 - 411	17655		Lys-26 to His-46.	S0052: 1 and L0589: 1.	
HNGEF81	570236	7904	2 - 220	17656		Glu-3 to Asp-13, Pro-18 to His-39.	S0052: 1	
	590251	9665	483 - 731	19417		Gly-10 to Asn-20, Glu-61 to Gly-79.		
	860649	9666	246 - 560	19418		Asp-10 to Gly-16.		
HNGEI10	968043	7905	72 - 251	17657				
HNGED92	654085	7906	257 - 3	17658		Ser-1 to Ile-7, Pro-32 to His-38, Pro-60 to Ala-69, Arg-71 to Gly-79.	S0052: 1 and L0589: 1. S0052: 1	
	846048	9667	56 - 265	19419				



HNGED46	838885	7907	259 - 441	17659	Glu-29 to Leu-34, Gly-43 to Lys-50.	S0032: 1	
HNGEB84	783132	7908	83 - 235	17660	Arg-31 to Ala-37.	S0052: 1 and L0748: 1.	
HNGEA17	561293	7909	1 - 261	17661	Leu-8 to Arg-15, Gly-72 to Leu-81.	S0032: 1	
HNGDZ93	888677	7910	1 - 132	17662	Ile-20 to Asn-25, Pro-33 to Ser-43.	AR051: 21, AR054: 7, AR050: 1	
HNGDW53	973311	7911	153 - 380	17663		S0032: 1	
HNGDW19	502499	7912	233 - 448	17664		S0032: 1	
	511193	9668	602 - 261	19420		S0032: 1	
					His-10 to Lys-19, Arg-21 to Cys-29, Pro-31 to Ser-41, Gln-47 to Trp-54, Ala-57 to Gly-69, Gln-84 to Phe-102.		
HNGDV38	572912	7913	50 - 136	17665		S0032: 1	
HNGDV26	572906	7914	70 - 249	17666	Pro-24 to Arg-38.	S0032: 1	
HNGDV15	572902	7915	3 - 275	17667	Ser-1 to Asn-16, Asn-27 to Gln-41.	S0052: 1	
HNGDV02	920504	7916	3 - 167	17668	Ser-24 to Ser-35.	S0032: 1	
HNGDV01	916989	7917	73 - 204	17669	Gln-16 to His-27, Ala-32 to Cys-37.	S0032: 1	
HNGDS21	396889	7918	538 - 404	17670	Ile-40 to Arg-45.	S0032: 1	
HNGDR65	670757	9669	151 - 291	19421	Pro-32 to Trp-37.	S0032: 1	
HNGDQ68	572896	7919	116 - 223	17671	Asp-1 to Ser-7.	S0032: 1	
	753164	7920	4 - 318	17672	Gly-1 to Gly-8, Thr-16 to Gly-25, Gly-65 to Glu-80.	S0052: 1 and L0592: 1.	
HNGDQ56	733550	7921	7 - 270	17673	Phe-64 to Arg-71, Gln-77 to His-83.	S0052: 1 and L0361: 1.	
HNGDO68	753580	7922	3 - 107	17674		S0052: 1 and L0748: 1.	
HNGDO54	521883	7923	225 - 368	17675	Lys-9 to Leu-14.	S0052: 1	
HNGDO53	574450	7924	68 - 217	17676		S0052: 1	
HNGDO52	868772	7925	1 - 192	17677	Gly-9 to Gly-15, Pro-33 to Pro-40.	S0052: 1	

HNGDO40	574449	7926	166 - 2	17678	Pro-1 to Lys-11.	S0052: 1
HNGDO30	574446	7927	45 - 131	17679	Glu-24 to Ser-29.	S0052: 1
HNGDO29	526804	7928	186 - 347	17680	Gln-11 to Gln-17.	S0052: 1
HNGDO18	526514	7929	122 - 238	17681	Arg-15 to Glu-24.	S0052: 1
HNGDO06	936059	7930	136 - 261	17682	Ser-15 to Phe-22, Ala-35 to Arg-41.	S0052: 1
HNGDO05	932400	7931	51 - 125	17683		S0052: 1
HNGDO04	523469	7932	219 - 320	17684	Leu-13 to Arg-19.	S0052: 1
HNGDM11	967512	7933	391 - 534	17685		L0766: 1, S0052: 1 and L0754: 1.
HNGDLS1	860671	7934	1 - 258	17686	Asn-6 to Ser-15, Pro-29 to Ser-34, Ser-49 to Arg-54.	AR054: 26, AR050: 23, AR051: 22 S0052: 1
HNGDF94	796744	7935	24 - 128	17687		S0052: 1
HNGDF70	506694	7936	87 - 206	17688		S0052: 1
HNGDF58	506693	7937	19 - 315	17689	Glu-36 to Ala-46, Phe-50 to Cys-56.	L0748: 2 and S0052: 1.
HNGDF38	574349	7938	112 - 240	17690	Asp-1 to Asn-8.	S0052: 1
HNGDF10	968240	7939	135 - 350	17691		S0052: 1
HNGDE79	781680	7940	269 - 403	17692	Glu-35 to Leu-41.	S0052: 1 and L0748: 1.
HNGDE74	765812	7941	1 - 120	17693		L0748: 2 and S0052: 1.
HNGDD27	860680	7942	91 - 252	17694	Met-26 to Ser-32.	S0052: 1
HNGDD03	924933	7943	59 - 202	17695	Arg-6 to Asn-12.	S0052: 1
HNGDD02	920675	7944	70 - 186	17696		S0052: 1
HNGDB78	772804	7945	1 - 195	17697		S0052: 1
HNGDB61	742043	7946	177 - 452	17698	Asn-1 to Lys-12.	S0052: 1 and L0589: 1.
HNGDB59	688019	7947	33 - 143	17699		S0052: 1
HNGDB34	574359	7948	12 - 191	17700		S0052: 1
HNGDB40	574346	7949	3 - 110	17701	Lys-6 to Arg-12.	S0052: 1
HNGDB16	574352	7950	2 - 100	17702	Lys-20 to Gly-25, Arg-27 to Thr-33.	S0052: 1
HNGDB04	576460	7951	2 - 115	17703	Thr-4 to Ala-11.	S0052: 1
HNGDA08	959964	7952	180 - 455	17704	Ser-1 to Gly-6, Arg-11 to Trp-20.	L0770: 1 and S0052: 1.
HNGCZ34	730895	7953	62 - 292	17705		S0052: 1 and L0746: 1.

HNGCY60	827144	7954	1 - 447	17706	Lys-1 to Ser-8.	S0052: 1 and L0747: 1.
HNGCY10	968247	7955	121 - 246	17707	Ala-30 to Ser-40.	L0766: 1 and S0052: 1.
HNGCQ38	544484	7956	302 - 87	17708	Arg-33 to Phe-38.	S0052: 1
HNGCP14	860692	9670	35 - 226	19422		
	417271	7957	1 - 258	17709		S0052: 1, L0748: 1 and L0731: 1.
HNGCO71	663340	7958	271 - 2	17710	Lys-6 to Gly-12, Pro-40 to Asn-47.	S0052: 1
	889333	9671	746 - 510	19423		
	889334	9672	3 - 185	19424		
HNGCO15	889335	9673	2 - 145	19425		
	494338	7959	200 - 3	17711	Arg-11 to Leu-17.	S0052: 1
	519229	9674	1 - 132	19426	Gly-10 to Phe-19.	
	825388	9675	1 - 255	19427		
HNGCG39	704547	7960	219 - 410	17712		L0743: 2 and S0052: 1.
HNGCE81	961700	7961	803 - 1195	17713	Ser-1 to Cys-10, Gly-21 to Asp-26.	S0052: 1
	971688	9676	576 - 184	19428	Ser-1 to Cys-10, Gly-21 to Asp-26.	
	971689	9677	143 - 331	19429	Arg-1 to Trp-31, Pro-33 to Arg-50, Leu-52 to Arg-60.	
	971690	9678	261 - 563	19430	Thr-27 to Ala-34, Arg-36 to Arg-44, Pro-89 to Ser-100.	
	860699	7962	536 - 745	17714	Gly-8 to Glu-18.	AR051: 24, AR054: 9, AR050: 3
HNGCE40						S0052: 1
HNGCC02	638114	7963	192 - 419	17715	Pro-39 to Ser-47.	S0052: 1
	917319	9679	186 - 413	19431		
HNGBW07	953894	7964	32 - 277	17716	Ala-30 to Lys-35.	S0052: 1 and L0749: 1.
HNGBS77	494334	7965	263 - 96	17717	Glu-43 to Tyr-51.	S0052: 1
	860721	9680	769 - 975	19432	Asn-1 to Lys-6.	
HNGBP42	574401	7966	76 - 291	17718	Thr-20 to Gly-27.	AR051: 11, AR054: 8, AR050: 1

HNGBO01	921413	7967	1 - 144	17719		S0052: 1	
HNGBN12	920949	7968	88 - 333	17720	Ser-70 to Trp-77.	S0052: 1 and L0759: 1.	
HNGBI40	880778	7969	72 - 356	17721		L0800: 1, S0052: 1 and L0758: 1.	
HNGBI25	678767	7970	331 - 507	17722	Pro-15 to Leu-22.	S0052: 1 and L0361: 1.	
HNGAZ70	757413	7971	138 - 359	17723	Pro-69 to Ser-74.	S0052: 1 and L0745: 1.	
HNGAZ56	733631	7972	186 - 416	17724	Asn-8 to Lys-14, Arg-42 to Arg-48, Ile-50 to Gly-55.	S0052: 1 and L0754: 1. L0747: 2 and S0052: 1.	
HNGAZ08	959977	7973	242 - 436	17725		L0766: 1, S0052: 1 and L0779: 1.	
HNGAX93	792525	7974	198 - 1	17726		S0052: 1 and L0749: 1.	
HNGAW50	723632	7975	3 - 107	17727		L0748: 2, S0052: 1 and L0749: 1.	
HNGAV20	669901	7976	1 - 186	17728		L0748: 4, L0659: 1 and S0052: 1.	
HNGAR02	920736	7977	105 - 332	17729	Arg-25 to Glu-41.	L0375: 1, L0365: 1 and S0052: 1.	
HNGAQ75	766512	7978	3 - 149	17730	Arg-6 to Leu-13.	S0052: 1.	
HNGAQ73	574649	7979	1 - 150	17731		S0052: 1.	
HNGAQ49	574652	7980	25 - 171	17732		S0052: 1.	
HNGAQ38	574658	7981	3 - 125	17733	Pro-10 to Thr-19.	S0052: 1.	
HNGAQ37	575492	7982	3 - 149	17734	Val-22 to Ser-34.	S0052: 1.	
HNGAQ14	574660	7983	27 - 95	17735	Pro-1 to Phe-8.	S0052: 1.	
HNGAQ02	920756	7984	5 - 115	17736	Glu-10 to Glu-18, His-20 to Asn-27.	S0052: 1.	
HNGAQ01	921434	7985	3 - 161	17737	Pro-16 to Gly-25.	S0052: 1.	
HNGAP69	513808	7986	406 - 666	17738		S0052: 1.	
HNGAM31	432620	7987	287 - 39	17739	Thr-46 to Ser-54.	S0052: 1.	
HNGAJ78	773425	7988	281 - 637	17740	Pro-7 to Ser-14.	AR054: 44, AR050: 36, AR051: 5 S0052: 1.	

HNGAD20	888315 890591	9683 7989	1 - 219 3 - 158	19435 17741		AR051: 23, AR054: 12, AR050: 3 S0052: 1	
HNFIJ67	751605	7990	75 - 260	17742	Glu-48 to Ala-54.	H0271: 1 and L0599: 1.	
HNFIJ08	959428	7991	326 - 520	17743	Asn-7 to Leu-14, Lys-25 to Arg-30.	H0271: 1, L0748: 1 and L0758: 1.	
HNFIY76	767681	7992	143 - 316	17744		H0416: 1 and L0749: 1.	
HNFIW53	467056	7993	172 - 363	17745	Ala-24 to Lys-29, Gly-37 to Arg-52.	H0416: 1 and L0745: 1.	
HNFIW14	658129	7994	2 - 265	17746		H0416: 1 and L0591: 1.	17
HNFIIT17	429602	7995	314 - 550	17747	Glu-1 to Gly-11, Glu-22 to Ser-29, Thr-1 to Thr-12.	H0416: 1	
HNFIN07	460818	9684	248 - 24	19436	Asp-1 to Thr-10.	H0416: 1 and L0748: 1.	
HNFIID11	953330	7996	257 - 526	17748	Pro-8 to Gly-13.	H0416: 1	
HNFIAS9	966347	7997	162 - 434	17749	His-8 to Ser-16.	H0416: 1 and L0748: 1.	
HNFIY59	739358	7998	283 - 450	17750	Asp-50 to Gly-55.		
HNFIY59	951005	7999	948 - 769	17751		H0271: 1	
HNFIHX38	735299	8000	320 - 673	17752	Glu-49 to Glu-58, His-70 to Gly-75.	H0271: 1 and L0748: 1.	
HNFIHV96	716913	8001	3 - 269	17753	Pro-9 to Thr-20, Glu-55 to Trp-65, Glu-70 to Ala-85.	L0766: 2, L0439: 2, H0271: 1 and L0756: 1.	
HNFIHU61	741901	8002	123 - 293	17754		H0271: 1	
HNFIHR36	732297	8003	230 - 57	17755		H0271: 1	
HNFIHA09	868091	9685	439 - 600	19437			
HNFIHA09	961165	8004	188 - 463	17756	Lys-1 to Glu-8, Glu-20 to Ala-27.	H0271: 1 and L0592: 1.	
HNFIHS84	783199	8005	1 - 93	17757	Pro-26 to Arg-31.	L0745: 2, L0746: 2, H0271: 1 and L0748: 1.	
HNFIJ65	574598	8006	3 - 95	17758	His-1 to Cys-12.	H0271: 1	
HNFIJ42	526844	8007	2 - 118	17759		H0271: 1	
HNFIJ17	574597	8008	80 - 184	17760	Asn-1 to Glu-13.	H0271: 1	
HNFIHG36	574601	8009	22 - 150	17761		H0271: 1	

HNFGB32	574605	8010	127 - 240	17762			H0271: 1
HNFGB80	574602	8011	1 - 72	17763	Thr-8 to Arg-14.		H0271: 1
HNFGG18	574608	8012	37 - 144	17764			H0271: 1 and L0756: 1.
HNFGG06	936086	8013	2 - 295	17765			H0271: 1
HNFGF88	522077	8014	126 - 257	17766			H0271: 1
HNFCF66	860896	8015	88 - 372	17767			H0271: 1 and L0758: 1.
HNCFG52	522293	8016	61 - 360	17768			H0271: 1
HNFQF37	574609	8017	41 - 223	17769	Leu-50 to Val-55.	22q	H0271: 1
HNFQE80	571306	8018	75 - 245	17770	Lys-1 to Asp-6.		H0271: 1
HNFGE41	504165	8019	2 - 142	17771	Gly-30 to Lys-36.		H0271: 1
HNFGB81	778250	8020	297 - 497	17772	Cys-37 to Asp-42.		L0599: 2 and H0271: 1.
HNFGA92	790617	8021	222 - 419	17773			H0271: 1 and L0750: 1.
HNFGA85	521880	8022	51 - 365	17774			H0271: 1
HNFGAS7	571305	8023	3 - 113	17775			H0271: 1
HNFFU64	578096	8024	172 - 282	17776			H0271: 1, UNKWN: 1 and L0600: 1.
HNFFR38	455273	8025	704 - 339	17777	Gln-30 to Lys-35.		H0271: 1
	860903	9686	15 - 284	19438	Leu-54 to His-60.		
HNFFQ29	860905	8026	114 - 404	17778	Ser-76 to Pro-86.		H0271: 1 and L0774: 1.
HNFFO20	836239	8027	195 - 350	17779	Phe-14 to Leu-21. His-33 to Gln-40.		H0271: 1 and L0746: 1.
HNFFL57	786899	8028	208 - 423	17780	Leu-15 to Gly-20.		H0271: 1 and L0754: 1.
HNFFR05	932432	8029	37 - 132	17781			L0471: 1 and H0271: 1.
HNFCF75	767453	8030	3 - 158	17782			H0271: 1
HNFEY24	677114	8031	65 - 286	17783			H0271: 1
HNFSO6	936099	8032	198 - 332	17784			H0271: 1 and L0748: 1.
HNFEQ28	685514	8033	157 - 396	17785			H0271: 1 and L0747: 1.
HNFLB84	783211	8034	249 - 392	17786			H0271: 1 and L0748: 1.
HNFCV02	861004	8035	73 - 279	17787	Pro-36 to Gly-45, Ser-64 to Thr-69.		AR051: 40, AR054: 38, AR050: 29 H0271: 1
HNFCO90	529966	8036	31 - 168	17788	Ile-14 to Ser-30.		H0271: 1
HNFCO85	529967	8037	2 - 151	17789			H0271: 1
HNFCO32	518637	8038	1 - 216	17790			H0271: 1

HNFCO41	529970	8039	2 - 145	17791			H0271: 1		
HNFCO37	507312	8040	634 - 804	17792			L0748: 4, L0749: 2 and H0271: 1		
HNFCO32	529971	8041	3 - 206	17793			H0271: 1		
HNFCO22	529973	8042	35 - 160	17794			H0271: 1		
HNFC125	556464	8043	116 - 232	17795			AR051: 2, AR054: 1, AR050: 1		
HNFBY08	960222	8044	1 - 177	17796		Gln-16 to Lys-22.	H0271: 1 and L0457: 1, L0748: 2 and H0271: 1		
HNFBT45	574972	8045	154 - 375	17797		Ser-1 to Trp-6, Asn-8 to Trp-13, Ala-21 to Gly-38, Cys-46 to Trp-52.	AR051: 24, AR054: 9, AR050: 2		
HNFBQ02	921029	8046	29 - 271	17798		Lys-15 to Thr-21, Lys-27 to Leu-36, Asp-39 to Thr-47.	H0271: 1 and L0745: 1.		
HNFAF78	601639	8047	567 - 313	17799		Arg-25 to Ala-31.	H0271: 1		
HNEDR34	730953	8049	229 - 405	17801		Arg-1 to Gly-8, Pro-10 to Gly-15, His-41 to Gly-48, Pro-77 to Gly-91, Leu-151 to Val-158.	H0179: 1 and L0776: 1, H0179: 1 and L0777: 1.		
HNEDU66	861030	8048	116 - 337	17800		Leu-20 to Cys-26, His-52 to Ser-58.	H0179: 1 and L0766: 1.		
HNEDP86	785736	8050	170 - 394	17802		Pro-8 to Ala-20, Pro-36 to Ser-43, Ser-79 to Thr-84, Gly-90 to Pro-95.	H0179: 1 and L0764: 1.	19	
HNEDQ77	955894	8051	1 - 384	17803					
HNEDJ03	967115	8052	49 - 351	17804			H0179: 1, L0762: 1, L0806: 1, L0666: 1 and L0439: 1.	7p15	138079, 138079, 139191, 142959, 153880, 180104, 600994, 601649
HNEDH59	739533	8053	309 - 527	17805			L0439: 5 and H0179: 1.		

HNEDF15	946986	8054	56 - 235	17806	His-8 to Pro-16.		H0179: 1
	973855	9689	443 - 610	19441			
	973858	9690	107 - 265	19442			
HNEDD15	812918	8055	115 - 450	17807	Leu-58 to Lys-63, Ser-72 to Ala-84.		L0530: 2 and H0179: 1.
HNESC71	761415	8056	169 - 363	17808	Gly-29 to Glu-35.		H0179: 1 and L0599: 1.
HNCEP28	469521	8057	215 - 424	17809	Thr-50 to Ile-59.		H0179: 1 and L0599: 1.
	470445	9691	141 - 1	19443	His-39 to Arg-47.		
HNECN28	558790	8058	27 - 251	17810	Ser-21 to Gly-28.		H0179: 1
HNECI41	712607	8059	115 - 333	17811	Pro-42 to Glu-49, Arg-65 to Ser-73.		H0179: 1 and L0749: 1.
HNECD74	470015	8060	368 - 508	17812			H0179: 1
	484793	9692	397 - 185	19444			
HNBEY64	514762	8061	480 - 767	17813	Ser-8 to Cys-14, Lys-55 to Cys-61.		H0179: 1
HNBEY10	968455	8062	503 - 318	17814	Leu-3 to Glu-19.		H0179: 1 and L0776: 1.
HNBEBN04	927811	8063	168 - 422	17815			H0179: 1 and L0366: 1.
HNBEBM59	950732	8064	16 - 327	17816	Thr-48 to Pro-53.		H0179: 1
HNBEIM40	868109	8065	237 - 431	17817			H0179: 1
HNBEI395	529572	8066	2 - 202	17818	Pro-8 to Arg-13, Arg-28 to Gly-36, Pro-49 to Gly-54.		H0179: 1
HNBEI381	529571	8067	15 - 134	17819	Leu-21 to Glu-28.	AR061: 3, AR089: 2	
HNBEI367	529573	8068	25 - 126	17820	Glu-21 to Cys-30.	H0179: 1	
HNBEI362	861074	8069	28 - 252	17821	Leu-24 to Ser-40, Leu-68 to Arg-74.	H0179: 1	
HNBEI343	529574	8070	2 - 199	17822	Lys-27 to Glu-34.	H0179: 1	
HNBEI31	529577	8071	35 - 202	17823		H0179: 1	
HNBEI321	529578	8072	1 - 180	17824		H0179: 1	
HNBEJ10	968440	8073	3 - 167	17825		H0179: 1 and L0766: 1.	
HNBEI309	529579	8074	42 - 134	17826		H0179: 1	
HNBEI307	861072	8075	76 - 282	17827	Leu-6 to Pro-11, Thr-43 to Arg-51, Val-59 to Thr-69.	H0179: 1	



HNEBF27	684467	8076	2 - 148	17828	Ser-22 to Ser-27.	H0179: 1	
HNEBF20	529643	8077	2 - 79	17829	Gln-14 to Gly-23.	H0179: 1, L0662: 1, L0652: 1, L0776: 1 and L0758: 1.	
HNEAQ86	575534	8078	181 - 300	17830	Arg-6 to Cys-12.	H0179: 1	
HNEAQ37	507280	8079	1 - 237	17831		H0179: 1	
HNEAN10	968468	8080	143 - 349	17832		H0179: 1 and L0746: 1.	
HNEAK47	529646	8081	65 - 202	17833		H0179: 1	
HNEAF71	761414	8082	1 - 225	17834		H0179: 1 and L0742: 1.	
HNEAA59	738531	8083	222 - 488	17835	Pro-74 to Asn-81.	L0747: 2 and H0179: 1.	
HMWJD93	840419	8084	11 - 262	17836	Val-57 to Glu-62.	H0341: 1 and L0748: 1.	
HMWIZ55	731809	8085	2 - 151	17837		H0341: 1	
HMWIX77	973813	8086	201 - 647	17838	Glu-8 to Glu-15, Pro-43 to His-48.	H0341: 1	
HMWIX37	708676	8087	147 - 275	17839	Gly-5 to Asp-12.	L0747: 2, H0341: 1, L0774: 1, L0657: 1 and L0754: 1.	
HMWIS12	970753	8088	850 - 996	17840	Arg-14 to Leu-21.	L0779: 2, H0341: 1, L0766: 1 and L0515: 1.	
HMWIQ64	842657	8089	505 - 744	17841	Arg-20 to Asp-37.	L0748: 2 and H0341: 1.	
HMWIQ44	716509	8090	198 - 355	17842	Lys-1 to Pro-7.	H0341: 1	
HMWIO15	956253	8091	124 - 372	17843	Gln-23 to Thr-29, Cys-61 to Pro-73.	H0341: 1	
HMWIM05	861094	8092	178 - 366	17844	Leu-54 to Gly-63.	AR050: 75, AR054: 68, AR051: 62 H0341: 1	
HMWIL08	959512	8093	3 - 722	17845	Glu-28 to Pro-36, Gly-47 to Gly-56.	H0341: 1, L0741: 1, L0745: 1, L0747: 1 and L0759: 1.	
HMWIK10	964701	8094	184 - 558	17846	Leu-8 to Ser-16.	H0341: 1 and L0769: 1.	
HMWIG75	767332	8095	131 - 331	17847	Pro-10 to Gly-20, Gly-29 to His-35.	H0341: 1	
HMWIG26	861091	8096	2 - 301	17848		H0341: 1	
HMWIG17	663972	8097	4 - 159	17849	Asp-23 to Lys-29.	L0748: 2, H0341: 1 and L0747: 1.	
HMWIG13	657260	8098	19 - 354	17850	Ala-3 to Ser-8, Pro-10 to Gly-19.	H0341: 1	103000, 114350, 120900, 131195.

HMWIG01	913689	8099	51 - 161	17851	Leu-37 to Ser-53, Ser-63 to Cys-70, Pro-82 to Gln-93, Pro-95 to Pro-101.			185000, 189980, 600184, 602575, 602575
HMWID28	419821	8100	3 - 305	17852			H0341: 1	
HMWIA19	928488	8101	1 - 270	17853	Phe-16 to Ser-22, Pro-50 to Pro-56.		H0341: 1 and L0599: 1, AR054: 137, AR050: 129, AR051: 100 H0341: 1	
HMWHZ43	861097	8102	3 - 227	17854	Ile-1 to Pro-15, Leu-43 to Gly-48, Thr-51 to Glu-62, Leu-67 to Asp-75.		H0341: 1	
HMWHW82	779903	8103	55 - 174	17855	Phe-3 to Asp-10.		H0341: 1 and L0748: 1.	
HMWHV36	708099	8104	102 - 254	17856	Ser-9 to Phe-17, His-26 to Arg-32.		H0341: 1 and L0748: 1.	3
HMWHV12	970742	8105	184 - 420	17857	Ala-22 to Leu-30.		H0341: 1 and L0747: 1.	
HMWHP86	785510	8106	88 - 174	17858			H0341: 1 and L0748: 1.	
HMWHDP4	794306	8107	1 - 108	17859			H0341: 1	
HMWHB71	565104	8108	899 - 1129	17860	His-49 to Ala-57.		H0341: 1	
HMWGW79	646280	8109	54 - 377	17861	Thr-1 to Lys-12, Thr-68 to Arg-89.		L0439: 2, H0341: 1 and L0748: 1.	
HMWQG48	861114	8110	185 - 424	17862	Thr-46 to Ile-55.		AR050: 43, AR054: 39, AR051: 38 H0341: 1	
HMWGI79	774806	8111	462 - 262	17863	Arg-18 to His-27.		H0341: 1	
	774828	9694	79 - 285	19446	Glu-7 to Ser-12, Lys-38 to Gly-64.			
HMWGH30	455037	8112	268 - 119	17864	Asp-4 to Ser-14.		H0341: 1 and L0475: 1.	
	692606	9695	116 - 310	19447	Lys-41 to Asp-48.			
HMWGB06	935593	8113	133 - 345	17865			H0341: 1 and L0776: 1.	
HMWFI93	506636	8114	170 - 448	17866			H0341: 1 and L0439: 1.	
HMWFN80	573608	8115	98 - 205	17867			H0341: 1	
HMWFN37	861123	8116	58 - 441	17868	Pro-61 to Ala-71, Gly-86 to Asp-92.		H0341: 1, L0070: 1 and L0759: 1.	

HMWFN32	573603	8117	138 - 308	17869	Ala-9 to Ser-14.	H0341: 1	
HMWFI18	666681	8118	197 - 346	17870		H0341: 1 and L0748: 1.	
HMWFC88	592078	8119	46 - 357	17871	Trp-7 to Leu-14.	H0341: 1 and L0748: 1.	
HMWFD86	785629	8120	122 - 412	17872	Asn-4 to His-10, Gly-18 to Leu-34, Ala-48 to Trp-54.	H0341: 1 and L0766: 1.	
HMWFD68	861124	8121	3 - 161	17873	His-1 to Asp-6.	L0749: 2 and H0341: 1.	
HMWFC64	573596	8122	120 - 323	17874	Gly-24 to His-41.	H0341: 1	
HMWET56	812712	8123	2 - 259	17875	Ser-1 to Ser-8.	H0341: 1	
HMWEQ52	728535	8124	62 - 274	17876	Ala-28 to Gly-34.	H0341: 1 and L0766: 1.	
HMWEN61	909931	8125	2 - 322	17877	Glu-6 to Gly-11, Asp-61 to Asn-68, Glu-93 to Asn-102.	AR051: 21, AR054: 15, AR050: 1	
HMWEL56	733583	8126	3 - 263	17878	Glu-20 to Ala-35.	H0341: 1	
HMWEL53	861141	8127	3 - 137	17879	Lys-1 to Leu-16.	H0341: 1 and L0756: 1.	
HMWEA91	790331	8128	66 - 539	17880	Ser-2 to Cys-15.	H0341: 1 and L0740: 1. L0743: 2, L0777: 2, H0341: 1 and L0740: 1.	
HMWEA10	968105	8129	2 - 235	17881	His-8 to Asp-22.	L0777: 2 and H0341: 1.	
HMWDZ25	678724	8130	2 - 163	17882		H0341: 1 and L0748: 1.	
HMWDR15	660322	8131	1 - 417	17883	Asp-1 to Ile-32, Pro-34 to Pro-39, Leu-43 to Arg-48, Glu-71 to Thr-82, Pro-95 to Pro-102, Glu-114 to Lys-124.	H0341: 1 and L0754: 1.	
HMWDP06	935903	8132	18 - 110	17884		H0341: 1	
HMWDN60	974425	8133	61 - 375	17885	Pro-6 to Gly-11, Gly-54 to Arg-62.	L0756: 2 and H0341: 1.	
HMWDH55	732304	8134	98 - 310	17886	Pro-21 to His-38.	L0749: 2 and H0341: 1.	
HMWCH43	715575	8135	130 - 414	17887		H0341: 1 and L0748: 1.	
HMWCK88	955258	8136	92 - 190	17888	Phe-9 to Cys-17.	L0756: 2 and H0341: 1.	
HMWCH47	720581	8137	112 - 261	17889		H0341: 1 and L0439: 1.	
HMWCH04	615628	8138	2 - 130	17890	Ile-26 to Ser-33.	L0740: 2 and H0341: 1.	
HMWCG38	851630	8139	249 - 494	17891	Gly-1 to Lys-8, Ser-30 to Leu-43, Glu-68 to Gly-77.	H0341: 1 and L0748: 1.	

HMWB289	787111	8140	1 - 207	17892	Thr-18 to Lys-24.	H0341: 1 and L0748: 1.	
HMWB159	893995	8141	3 - 287	17893	Pro-59 to Trp-72.	AR054: 37, AR050: 34, AR051: 33, AR089: 5, AR061: 4 H0341: 1	
HMWB105	932558	8142	218 - 379	17894		L0740: 2, H0341: 1, L0761: 1, L0517: 1 and L0744: 1.	
HMWB177	888862	8143	3 - 404	17895		AR054: 18, AR051: 15, AR050: 2 H0341: 1	
HMWB140	712730	8144	393 - 617	17896		H0341: 1 and L0439: 1.	
HMWB129	927321	8145	2 - 499	17897		L0749: 2, H0341: 1, L0775: 1 and L0439: 1.	
HMWB161	859404	8146	2 - 202	17898	Pro-9 to Gly-18.	H0341: 1	
HMWB142	714114	8147	310 - 423	17899	Gln-3 to Ser-8.	H0341: 1 and L0748: 1.	
HMWAJ04	586507	8148	27 - 395	17900	Val-1 to Leu-19, Pro-23 to Thr-29, Thr-34 to Thr-39, Pro-45 to Asn-54, His-61 to Trp-70.	AR051: 120, AR050: 118, AR054: 100 H0341: 1	
HMVDZ11	966351	8149	2 - 145	17901		S0212: 1, L0744: 1 and L0596: 1.	
HMVDV55	811616	8150	3 - 245	17902		L0439: 2, S0212: 1 and L0748: 1.	
HMVDQ02	919057	8151	209 - 355	17903		S0212: 1, L0774: 1 and L0589: 1.	
HMVDL45	717384	8152	341 - 655	17904	Ser-1 to Gln-17, Tyr-48 to Ser-64, Asp-69 to Lys-84.	L0438: 2, L0439: 2 and S0212: 1.	
HMVDI60	877124	8153	398 - 661	17905	Glu-29 to Ile-36, Arg-47 to Ser-54, Arg-62 to Ser-67.	S0212: 1, L0756: 1 and L0731: 1.	
HMVDE10	861184	8154	247 - 462	17906		S0212: 1 and L0759: 1.	
HMVCY89	786651	8155	352 - 471	17907		L0748: 5 and S0212: 1.	
HMVCY14	657801	8156	1 - 474	17908		L0748: 3 and S0212: 1.	
HMVC026	681174	8157	119 - 340	17909	Asp-21 to Leu-27.	S0212: 1, L0471: 1 and	

HMVBV77	771974	8158	422 - 577	17910	Asn-2 to Asp-9	L0754: 1.	
HMVBV16	661692	8159	318 - 461	17911		S0212: 1 and L0439: 1. S0212: 1, L0790: 1, L0749: 1 and L0777: 1.	
HMVBUB89	786118	8160	213 - 452	17912	Tyr-22 to Thr-27.	S0212: 1 and L0439: 1.	
HMVB083	780366	8161	494 - 736	17913	Ala-47 to His-52.	L0747: 2 and S0212: 1.	
HMVB091	790025	8162	94 - 219	17914	Phe-23 to Ala-28.	S0212: 1 and L0754: 1.	
HMVBFB52	726546	8163	3 - 215	17915		S0212: 1 and L0757: 1.	
HMVBFB44	716410	8164	264 - 386	17916		L0749: 2 and S0212: 1.	
HMVA154	888180	8165	86 - 562	17917	Thr-13 to Trp-20, Gly-52 to Leu-59, Gln-138 to Thr-143.	S0212: 1 and L0769: 1.	108730, 147781, 172471, 186580, 266600, 600760, 600760, 600761, 600761, 602066
HMVA152	726515	8166	39 - 428	17918	Thr-10 to Cys-25, Ser-39 to Asp-47.	S0212: 1 and L0754: 1.	
HMVA156	732985	8167	146 - 304	17919	Ser-31 to Ser-43.	L0439: 2, S0212: 1 and L0594: 1.	
HMVA171	761400	8168	2 - 145	17920		S0212: 1 and L0439: 1.	
HMVA152	861210	8169	1 - 378	17921	Ile-46 to Ile-51.	S0212: 1 and L0754: 1.	
HMVA167	751600	8170	527 - 811	17922		L0748: 2 and S0212: 1.	
HMSPH53	861245	8171	2 - 307	17923	Ser-67 to Trp-72.	S0426: 1 and L0783: 1.	
HMSPH04	926800	8172	2 - 250	17924		L0776: 2, L0588: 2, S0426: 1, L0803: 1 and L0602: 1.	
HMSPA30	861265	8173	365 - 189	17925		S0426: 1 and L0749: 1.	
HMSP028	861287	8174	473 - 24	17926		S0426: 1 and L0565: 1.	157640, 174900, 180250, 186770, 236730, 271245, 278000, 278000, 600095, 600512, 601107, 601130, 602082
HMSP088	861292	8175	1 - 471	17927	Glu-9 to Gln-18, Asp-24 to Leu-29, Pro-38 to Ser-112, Ala-115 to Thr-121.	S0426: 1 and L0591: 1.	

HMSOJ01	915084	8176	500 - 775	17928	Pro-33 to Thr-39.	S0426: 1, L0662: 1, L0766: 1, L0748: 1, L0779: 1 and L0759: 1.	
HMSOH03	922828	8177	212 - 397	17929		S0426: 1, L0438: 1 and L0439: 1.	
HMSNP06	934161	8178	249 - 419	17930		S0426: 1 and L0769: 1.	
HMSNG04	926845	8179	204 - 431	17931	Leu-1 to Lys-7, Cys-13 to Ser-23, Ser-25 to Gly-48, Thr-57 to Pro-65.	L0623: 1 and S0426: 1.	
HMSMY10	963431	8180	39 - 191	17932	Ala-1 to Tyr-12, Pro-44 to Leu-51.	S0426: 1, L0748: 1 and L0749: 1.	
HMSMW91	861336	8181	1 - 117	17933		S0426: 1 and L0749: 1.	
HMSMW64	861338	8182	22 - 441	17934	Val-3 to Lys-9, Leu-32 to Gly-40, Glu-70 to Gly-83.	S0426: 1 and L0589: 1.	
HMSMO59	861341	8183	148 - 495	17935	Arg-33 to Phe-41, Ser-62 to Lys-67.	L0596: 2 and S0426: 1.	
HMSMN71	927097	8184	3 - 533	17936	Lys-1 to Glu-7, Glu-18 to Asp-33, Leu-44 to Leu-50, Thr-67 to Ala-82, Ser-90 to Ser-98, Leu-130 to Glu-135.	AR061: 7, AR089: 3 L0483: 1 and S0426: 1.	
HMSMN26	861345	8185	2 - 136	17937	Gly-22 to Trp-29.	S0426: 1 and L0748: 1.	
HMSLH07	953390	8186	1 - 96	17938		S0002: 1 and L0521: 1.	
HMSK008	861372	8187	184 - 447	17939		S0002: 1	
HMSKH24	495770	8188	372 - 268	17940	Pro-19 to Arg-27.	S0002: 1	
	596892	9696	178 - 390	19448			
HMSIX84	763032	8189	338 - 496	17941	Asn-1 to His-10.	S0002: 1 and L0439: 1.	
HMSJW48	852496	8190	674 - 1159	17942	Pro-52 to Ser-58, Cys-82 to Ala-87, Pro-104 to Ala-114, Pro-123 to Thr-128, Gly-144 to Gly-158.	S0002: 1	
HMSIU80	775416	8191	231 - 395	17943	Lys-18 to Asp-24.	L0748: 3 and S0002: 1.	

HMSIQ40	954003	8192	2 - 331	17944		S0002: 1	
HMSIO72	465884	8193	49 - 270	17945	Leu-52 to Tyr-58.	S0002: 1 and L0748: 1.	
HMSIO43	715274	8194	1 - 63	17946		S0002: 1	
HMSIM02	920070	8195	351 - 1091	17947	Arg-33 to Thr-38.	S0002: 1 and L0597: 1.	
HMSIJL53	921263	8196	71 - 433	17948	Lys-13 to Ala-20, Gln-57 to Cys-65.	AR050: 30, AR051: 29, AR054: 23	
						S0002: 1	
HMSIJ22	495774	8197	581 - 408	17949		S0002: 1	
	855778	9697	353 - 613	19449	Tyr-28 to Gly-34.		
HMSIJ78	772846	8198	170 - 421	17950		S0002: 1 and L0591: 1.	
HMSID56	868168	8199	219 - 446	17951		S0002: 1 and L0766: 1.	
HMSIZ49	973806	8200	445 - 645	17952		S0002: 1	
HMSIW04	465835	8201	585 - 749	17953		S0002: 1 and L0756: 1.	
HMSIU74	765600	8202	270 - 377	17954		S0002: 1 and L0746: 1.	
HMSIT32	699241	8203	322 - 492	17955		S0002: 1, L0517: 1 and L0756: 1.	
					Ser-29 to Leu-34, Arg-42 to Gly-51.	S0002: 1 and L0439: 1.	
HMSIT28	686663	8204	29 - 217	17956			
					Gln-13 to Leu-18, Asn-29 to Arg-35.	S0002: 1 and L0599: 1.	
HMSIP20	669671	8205	169 - 300	17957		S0002: 1 and L0749: 1.	
HMSIP02	920079	8206	402 - 223	17958		S0002: 1 and L0766: 1.	
HMSIK04	615218	8207	16 - 201	17959	Trp-1 to Asp-6.	S0002: 1 and L0749: 1.	
HMSIB06	935151	8208	289 - 47	17960	Asn-3 to Trp-10.		
	935272	9698	212 - 403	19450			
HMSHV11	967007	8209	28 - 153	17961	Tyr-1 to Asn-7.	S0002: 1 and L0605: 1.	
HMSHU68	753038	8210	513 - 271	17962		S0002: 1 and L0757: 1.	
HMSHU37	495778	8211	195 - 1	17963	Leu-40 to Gly-53, Arg-60 to Arg-65.	S0002: 1	
	855786	9699	1 - 282	19451			
	855787	9700	344 - 514	19452			
HMSHT11	967068	8212	348 - 485	17964		L0476: 1 and S0002: 1.	
HMSHO45	717808	8213	57 - 227	17965		S0002: 1 and L0745: 1.	
HMSHU09	709471	8214	359 - 736	17966		S0002: 1 and L0731: 1.	
HMSHI61	741834	8215	111 - 341	17967	Thr-43 to Asp-49.	L0777: 2, S0002: 1, L0745: 1, L0746: 1 and L0750: 1.	

HMSHG08	959461	8216	1 - 150	17968	Pro-11 to Ala-22, Thr-44 to Arg-50.	S0002: 1 and L0742: 1.
HMSHG06	935496	8217	194 - 349	17969	Thr-13 to Arg-24, Cys-40 to Lys-47.	S0002: 1 and L0758: 1.
HMSHE81	784966	8218	2 - 430	17970	Ala-4 to Tyr-11, Thr-26 to Pro-38, Ser-56 to Asp-64, Ser-70 to Ser-76.	AR089: 27, AR061: 8 S0002: 1 and L0754: 1.
HMSHE17	662265	8219	446 - 694	17971	Ser-11 to Thr-18.	AR050: 29, AR051: 29, AR054: 26 L0748: 2 and S0002: 1.
	847271	9701	418 - 606	19453	Pro-31 to Cys-40, Pro-42 to Glu-48.	
HMSHD80	882700	8220	273 - 518	17972		S0002: 1
HMSHB81	777946	8221	424 - 636	17973	Thr-31 to Gly-38, Leu-43 to Asn-55.	L0750: 2 and S0002: 1.
HMSGX86	793163	8222	3 - 158	17974	Ala-21 to Lys-28.	S0002: 1
HMSGF56	733562	8223	174 - 308	17975	Asp-1 to Asn-9 Leu-31 to Val-39.	L0748: 2 and S0002: 1.
HMSGF54	730823	8224	265 - 119	17976	Ser-41 to Arg-49.	S0002: 1 and L0362: 1.
HMSGF51	761922	8225	124 - 333	17977	Gln-20 to Ser-25, Gln-42 to Ile-52.	S0002: 1 and L0592: 1.
HMSGD24	677337	8226	14 - 136	17978	Lys-22 to His-38, Lys-48 to Arg-59.	L0748: 2 and S0002: 1.
HMSGC85	783608	8227	266 - 21	17979		S0002: 1, L0779: 1 and L0731: 1.
	881955	9702	275 - 514	19454	Lys-1 to Ala-10, Gln-53 to Thr-58.	
HMSFY63	745230	8228	184 - 315	17980	Gly-8 to Glu-18.	S0002: 1 and L0745: 1.
HMSFX73	888326	8229	97 - 2	17981		AR054: 44, AR050: 25, AR051: 19 S0002: 1
HMSFS08	959773	8230	290 - 421	17982	Glu-1 to Tyr-7.	S0002: 1 and L0758: 1.
HMSFR23	919890	8231	763 - 1002	17983	Gly-58 to Ala-64.	S0002: 1
HMSFN08	959774	8232	1 - 282	17984		S0002: 1 and L0794: 1.
HMSFN68	753635	8233	2 - 88	17985		S0002: 1
HMSFN13	384695	8234	22 - 222	17986	Leu-1 to His-6.	S0002: 1



HMSEN08	960147	8235	41 - 244	17987	Gly-2 to Leu-13.	L0748: 3, S0002: 1 and L0601: 1.	
HMSM434	706366	8236	97 - 333	17988	Glu-5 to Arg-11, Arg-19 to Lys-25, Ser-61 to Gly-69.	S0002: 1 and L0748: 1.	
HMSM64	842040	8237	73 - 198	17989	Pro-18 to Thr-23, Arg-29 to Asn-34.	S0002: 1 and L0759: 1.	
HMSM67	751865	8238	163 - 2	17990	Arg-5 to Ser-10.	S0002: 1	
HMSDQ15	600654	8239	2 - 166	17991	Glu-31 to Gln-36.	S0002: 1 and L0748: 1.	
HMSDL70	909997	8240	2 - 307	17992	Pro-12 to Glu-21, Gln-29 to Ser-34.	S0002: 1 and L0741: 1.	
HMSDK10	968435	8241	3 - 164	17993		S0002: 1 and L0756: 1.	
HMSDI34	559991	8242	2 - 154	17994	His-1 to Ser-7.	S0002: 1	
HMSDG12	574950	8243	2 - 238	17995		S0002: 1 and L0741: 1.	19p13.3
							108725, 120700, 133171, 136836, 145981, 147141, 164953, 188070, 600957, 601238, 601846, 602216, 602477
HMSDG04	927804	8244	94 - 270	17996		S0002: 1 and L0527: 1.	
HMSDB08	960260	8245	175 - 318	17997	Tyr-15 to Asn-20.	S0002: 1 and L0805: 1.	
HMSDA81	778469	8246	1 - 183	17998	Thr-12 to Ala-17.	S0002: 1 and L0752: 1.	
HMSCY01	921768	8247	1 - 240	17999		S0002: 1 and L0748: 1.	
HMSCW45	723483	8248	3 - 242	18000		L0758: 2, S0002: 1 and L0748: 1.	
HMSCT69	855855	8249	258 - 476	18001		S0002: 1	
HMSCP73	764703	8250	183 - 368	18002		S0002: 1 and L0766: 1.	
HMSCO63	855863	8251	238 - 444	18003	Ser-25 to Pro-31, Ser-45 to Gln-54.	L0748: 2, S0002: 1 and L0762: 1.	
HMSCD07	954243	8252	3 - 161	18004		S0002: 1 and L0592: 1.	
HMSBZ67	973737	8253	1 - 234	18005	Asn-1 to Arg-7.	S0002: 1	
HMSBZ13	855866	8254	2 - 142	18006		S0002: 1 and L0599: 1.	
HMSBY67	752145	8255	213 - 323	18007	Gln-24 to Gly-36.	S0002: 1 and L0777: 1.	
HMSBW54	880721	8256	89 - 289	18008	Leu-1 to Arg-7, Lys-34 to Lys-39.	S0002: 1 and L0766: 1.	

HMSBU24	678709	8257	194 - 475	18009	Asp-4 to Gly-14, Gln-16 to Cys-22, Arg-45 to Trp-56, Val-68 to Val-78.	L0603: 2 and S0002: 1.
HMSBO95	796724	8258	249 - 377	18010		
HMSBM92	792970	8259	3 - 140	18011	His-18 to Glu-25.	S0002: 1 and L0749: 1.
HMSBI82	780229	8260	3 - 188	18012	Tyr-39 to Trp-45.	S0002: 1
HMSBI56	733772	8261	3 - 68	18013	Asn-11 to Gln-17.	S0002: 1
HMSBH85	784576	8262	211 - 423	18014	Pro-50 to Cys-55.	S0002: 1 and L0600: 1.
HMSBH08	958802	8263	981 - 658	18015		S0002: 1
	958939	9703	451 - 122	19455		
HMSBH07	954457	8264	59 - 382	18016	Gly-30 to Lys-41, Asn-72 to Gly-80.	S0002: 1 and L0655: 1.
HMSBF92	582654	8265	489 - 253	18017		S0002: 1
	791382	9704	278 - 475	19456		
HMSBC31	960021	8266	207 - 434	18018	Pro-1 to Lys-14.	S0002: 1 and L0748: 1.
HMSBA43	715699	8267	43 - 261	18019		S0002: 1, L0766: 1 and L0748: 1.
HMSAV84	781872	8268	45 - 233	18020		S0002: 1 and L0748: 1.
HMSAV65	747792	8269	405 - 190	18021		S0002: 1
HMSAT76	842065	8270	2 - 172	18022	Arg-3 to Ala-15, Ala-26 to Trp-34, Gly-37 to Ser-43.	S0002: 1, L0439: 1 and L0779: 1.
					Phe-4 to Ser-11.	
HMSAQ95	796728	8271	18 - 152	18023		S0002: 1 and L0731: 1.
HMSAQ58	738495	8272	2 - 157	18024		L0740: 2 and S0002: 1.
HMSAP36	518062	8273	95 - 223	18025	Glu-20 to Glu-26.	S0002: 1
HMSAO42	714316	8274	74 - 187	18026		S0002: 1 and L0749: 1.
HMSAH80	781640	8275	71 - 310	18027	Arg-8 to Arg-14, Arg-26 to Thr-33, Ser-50 to Trp-55.	S0002: 1 and L0748: 1.
HMQDV06	936015	8276	11 - 415	18028	Thr-18 to Glu-26, Pro-44 to Gln-49, Thr-55 to Lys-60, Arg-100 to Asn-107, Pro-115 to Gln-122.	H0250: 1, L0761: 1 and L0800: 1.
HMQDQ42	457221	8277	1 - 294	18029	Leu-12 to Asp-18.	H0250: 1 and L0748: 1.

HMQDL40	711421	8278	121 - 255	18030	Cys-62 to Ser-72, Ala-1 to Ser-7, Pro-29 to Gly-39.	H0250: 1 and L0749: 1.	
HMOCZ16	708066	8279	162 - 386	18031		L0748: 2 and H0250: 1.	
HMOCZ18	574068	8280	1 - 297	18032		H0250: 1 and L0743: 1.	
HMOCX42	712966	8281	57 - 266	18033		L0748: 2 and H0250: 1.	
HMOCV29	974683	8282	2 - 499	18034	Pro-7 to Gln-20.	H0250: 1 and L0766: 1.	
HMOCN17	385544	8283	124 - 288	18035		H0250: 1, L0779: 1 and L0591: 1.	
HMOCM46	719201	8284	2 - 136	18036	Lys-6 to Lys-15.	H0250: 1	
HMOCM41	711586	8285	2 - 115	18037	Ser-14 to Tyr-20.	H0250: 1	
HMOCM05	932363	8286	40 - 171	18038		H0250: 1	
HMOCM69	754188	8287	1 - 201	18039		H0250: 1 and L0756: 1.	
HMOCM54	728851	8288	195 - 278	18040		L0747: 2 and H0250: 1.	
HMOCB03	963370	8289	1 - 255	18041		L0498: 2 and H0250: 1.	
HMOCB40	779856	8290	204 - 473	18042		H0250: 1 and L0777: 1.	
HMPTA56	921233	8291	3 - 290	18043	Phe-1 to Gly-7, Lys-9 to Pro-23, Arg-65 to Ala-70, Leu-76 to Gln-82, Leu-90 to Pro-95.	H0109: 1	
HMPTA28	685099	8292	171 - 284	18044	Pro-5 to Met-10.	H0109: 1	
HMPSC38	709222	8293	97 - 330	18045		H0109: 1 and L0748: 1.	
HMPBB84	781863	8294	163 - 345	18046		H0061: 1	
HMOAD90	600400	8295	2 - 184	18047	Asp-11 to Gln-16, Asp-30 to Asn-39.	H0191: 1	
HMOAD60	855919	8296	2 - 241	18048		AR054: 2, AR051: 2, AR050: 1 H0191: 1	
HMMCL96	796276	8297	316 - 480	18049		L0748: 1 and H0444: 1.	
HMMCH01	913715	8298	187 - 342	18050	Val-22 to Gly-29.	L0785: 1 and H0444: 1.	
HMMCH69	754902	8299	2 - 112	18051		H0444: 1 and L0605: 1.	
HMMCH09	625366	8300	287 - 595	18052	Gln-40 to Gly-46, Ser-72 to His-78, Pro-93 to Trp-99.	L0748: 1 and H0444: 1.	

HMMCD83	875272	8301	315 - 440	18053	Thr-8 to Lys-20.	L0599: 2, L0369: 1 and H0444: 1.
HMMCD23	675720	8302	1 - 276	18054	Thr-10 to Gly-17, Ser-39 to Ala-66.	L0754: 1 and H0444: 1.
HMMCA11	966677	8303	28 - 336	18055	Thr-31 to Asp-44.	L0749: 1 and H0444: 1.
HMMCA08	958980	8304	81 - 260	18056		L0532: 1 and H0444: 1.
HMMB218	666192	8305	247 - 441	18057		L0748: 7, L0766: 3, L0749: 2, L0717: 1, L0527: 1, L0779: 1 and H0444: 1.
HMMB205	566870	8306	75 - 401	18058	Pro-14 to Ser-20, Glu-80 to Trp-87.	AR051: 53, AR050: 53, AR054: 36, L0759: 1 and H0444: 1.
	882446	9705	314 - 682	19457	Ser-3 to Thr-8.	
HMMBX01	916067	8307	100 - 270	18059		L0758: 1 and H0444: 1.
HMMBV08	958987	8308	381 - 223	18060		L0769: 1 and H0444: 1.
HMMBU13	597147	8309	222 - 344	18061		L0600: 2 and H0444: 1.
HMMBT64	746399	8310	257 - 421	18062		L0748: 1 and H0444: 1.
HMMBT30	841959	8311	305 - 583	18063	Ser-72 to Asn-77.	L0766: 1 and H0444: 1.
HMMBT03	855930	8312	99 - 332	18064		H0444: 1
HMMBQ08	958988	8313	117 - 281	18065	Pro-8 to Lys-15.	L0740: 1 and H0444: 1.
HMMBO49	722753	8314	22 - 279	18066		L0754: 1 and H0444: 1.
HMMBO28	686318	8315	1 - 147	18067		L0748: 1 and H0444: 1.
HMMBN76	769890	8316	327 - 494	18068	Lys-1 to Ile-7.	L0748: 1, L0749: 1 and H0444: 1.
HMMBN71	973436	8317	95 - 331	18069	Asn-72 to Leu-79.	H0444: 1
HMMBN54	729352	8318	135 - 398	18070		L0748: 1 and H0444: 1.
HMMBM83	781010	8319	19 - 192	18071		L0748: 1 and H0444: 1.
HMMBL55	731523	8320	221 - 373	18072	Pro-8 to Lys-28, Ile-41 to Cys-48.	L0754: 1 and H0444: 1.
HMMBH64	746402	8321	2 - 193	18073	Ser-23 to Glu-29, Pro-54 to Asp-63.	L0439: 1 and H0444: 1.
HMMBF86	812597	8322	2 - 163	18074	Arg-20 to Trp-26, Ser-30 to Glu-43.	L0748: 1 and H0444: 1.
HMMBF72	761389	8323	165 - 317	18075	Lys-16 to Lys-51.	H0444: 1 and L0599: 1.
HMMBF41	711731	8324	366 - 506	18076		H0444: 1 and L0581: 1.

HMMALV44	716396	8325	183 - 338	18077	Lys-12 to Arg-18.	L0748: 2 and H0444: 1.
HMMAT23	973437	8326	3 - 305	18078	Arg-1 to Gly-7.	H0444: 1
HMMAT08	990005	8327	125 - 343	18079	Gln-19 to Leu-25.	H0444: 1 and L0599: 1.
HMMAS73	764280	8328	376 - 597	18080	Lys-22 to Gly-27.	L0756: 1 and H0444: 1.
HMMAR20	669523	8329	373 - 549	18081		L0748: 2 and H0444: 1.
HMMAO70	757070	8330	324 - 413	18082		L0748: 1 and H0444: 1.
HMMAO06	935087	8331	453 - 656	18083	Pro-28 to Asn-33, Phe-46 to Gly-52, Thr-61 to Asn-67.	L0638: 1 and H0444: 1.
HMMAL71	760206	8332	159 - 425	18084	Pro-79 to Ile-84.	H0444: 1
HMMAL69	754908	8333	213 - 365	18085	Pro-12 to Gln-19.	L0749: 1, H0444: 1 and L0605: 1.
HMMAL59	738982	8334	246 - 404	18086	Arg-1 to Gly-7.	H0444: 1
HMMAL54	729351	8335	241 - 357	18087	Glu-2 to Gly-7.	H0444: 1
HMMAL44	716407	8336	144 - 320	18088	Thr-9 to Trp-19.	L0662: 1, L0749: 1 and H0444: 1.
HMMAL42	713542	8337	34 - 183	18089	Lys-24 to Val-30, Thr-44 to Arg-49.	H0444: 1
HMMAL35	707278	8338	97 - 303	18090	Lys-1 to Gln-6, Ser-27 to Lys-43, Glu-50 to Lys-62.	L0529: 1 and H0444: 1.
HMMAL30	693545	8339	6 - 80	18091		H0444: 1
HMMAL18	665512	8340	174 - 356	18092	Ser-1 to Lys-32.	H0444: 1
HMMAL16	661699	8341	296 - 412	18093	Pro-20 to Phe-25.	H0444: 1
HMMAL83	781016	8342	193 - 345	18094		H0444: 1.
HMMAL61	741662	8343	142 - 321	18095		L0748: 1 and H0444: 1.
HMMALF92	973971	8344	265 - 459	18096		H0444: 1
HMMAL34	842015	8345	297 - 479	18097		L0762: 1 and H0444: 1.
HMMAL45	720838	8346	55 - 351	18098		L0748: 4, L0367: 1, L0747: 1 and H0444: 1.
HMMAL16	856007	8347	117 - 344	18099	Ser-23 to Cys-31.	L0754: 1 and H0444: 1.
HMMALB96	826488	8348	285 - 563	18100		H0444: 1
HMC1W93	897377	8349	1 - 306	18101	Arg-1 to Gly-16, Thr-30 to Ser-42.	S0344: 1

HMCHZ77	771795	8350	2 - 346	18102			AR061: 8, AR089: 5 S0344: 1 and L0748: 1.
HMCHS34	703691	8351	127 - 273	18103	Arg-18 to Gly-23.		L0748: 3 and S0344: 1.
HMCHK58	752431	8352	580 - 419	18104			S0344: 1 and L0601: 1.
HMCGX46	886903	8353	1 - 426	18105	Glu-25 to Asn-32, His-49 to Asn-57.		AR051: 24, AR050: 18, AR054: 10 S0344: 1
HMCGV66	787512	8354	1 - 216	18106	Tyr-16 to Trp-25, Val-49 to Pro-54, Glu-62 to Leu-68.		S0344: 1 and L0747: 1.
HMCGF39	856222	8355	1 - 321	18107			L0455: 1, S0344: 1 and L0439: 1.
HMCFR57	734404	8356	161 - 358	18108			S0344: 1, L0748: 1 and L0756: 1.
HMCFM86	846578	8357	13 - 171	18109	Ser-30 to Gly-36.		S0344: 1 and L0748: 1.
HMCFM04	927002	8358	182 - 343	18110	Lys-16 to Trp-22, Gly-39 to Ala-50.		S0344: 1 and L0517: 1.
HMCDN93	791555	8359	185 - 322	18111	Arg-1 to Val-9.		S0142: 1, L0439: 1 and L0746: 1.
HMCDL70	757192	8360	98 - 373	18112	Thr-10 to Gly-17, Lys-21 to Pro-30, Pro-45 to Ser-55.		S0142: 1 and L0600: 1.
HMCA04	925591	8361	225 - 563	18113	His-1 to Ile-14.		S0142: 1 and L0748: 1.
HMALZ77	836266	8362	2 - 343	18114	Asn-12 to Gln-17, Gly-25 to Ala-34, Lys-72 to Ser-78.		AR089: 1, AR061: 0 S0278: 1 and L0591: 1.
HMALK06	933960	8363	61 - 222	18115	Gly-31 to Leu-36.		S0278: 1 and L0456: 1.
HMAJZ39	751523	8364	2 - 280	18116	Glu-13 to Gln-19.		S0278: 1, L0438: 1 and L0604: 1.
HMAJL09	950168	8365	2 - 493	18117	Tyr-30 to Ser-35, Arg-94 to Gly-100.		AR089: 0, AR061: 0 S0278: 1
HMAJL09	856821	8366	1 - 453	18118	Arg-41 to Ala-58, Ala-62 to Ser-71, Leu-88 to Gly-96.		AR051: 19, AR050: 17, AR054: 2 S0278: 1
HMAJQ20	669436	8367	94 - 303	18119	Asn-16 to Asp-21.		L0745: 2 and S0278: 1.
HMAJH15	956705	8368	534 - 268	18120	Ala-2 to Trp-7.		AR089: 1, AR061: 0

HMATA55	899404	8369	89 - 877	18121	Pro-35 to Asp-46, Pro-28 to Cys-34, Asn-153 to Gly-161, Ala-227 to Asn-233.	S0278: 1 AR051: 37, AR061: 9, AR054: 6, AR089: 4, AR050: 1 S0278: 1		
HMAHP37	566344	8370	177 - 440	18122	Gln-17 to Gly-27.	S0278: 1		
HMAGT95	795686	8371	22 - 330	18123	Cys-44 to Ser-52, Arg-96 to Leu-103.	S0278: 1 and L0742: 1.		
HMAGS90	788683	8372	58 - 258	18124	Phe-4 to Leu-11, Pro-14 to Leu-20.	L0777: 2 and S0278: 1.		
HMAGI39	910152	8373	118 - 321	18125		L0776: 2 and S0278: 1.	19q13.4	134790, 191044, 600040, 600138
HMAFF71	760304	8374	2 - 550	18126		L0731: 2, S0144: 1 and L0750: 1		
HMAFC96	796348	8375	32 - 448	18127	Arg-1 to Ser-13, Gly-24 to Pro-33, Ser-44 to Glu-50.	S0144: 1 and L0748: 1.	11p15.5	125852, 126452, 126452, 141900, 141900, 141900, 141900, 141900, 141900, 142000, 142000, 142200, 142250, 142270, 176730, 176730, 176730, 190020, 191290, 192500, 192500, 194071, 194071, 204500, 600856, 601680, 602631, 602631
HMAEK93	791549	8376	355 - 582	18128	Ser-24 to Lys-39, Trp-52 to Pro-58.	S0144: 1 and L0731: 1.		
HMADEF74	944465	8377	144 - 1145	18129	Gly-5 to Glu-16, Gly-28 to Ser-34, Pro-186 to Pro-196, Ser-213 to Asn-219, Ser-249 to Ile-267.	AR089: 12, AR061: 8 S0144: 1		
HMACZ84	975349	8378	147 - 353	18130	His-7 to Phe-13.	S0144: 1		

HMCAV54	922354	8379	421 - 170	18131	Thr-50 to Phe-62, Pro-69 to His-75.	AR089: 21, AR061: 16 S0144: 1 and L0767: 1.
HMABT55	753560	8380	27 - 275	18132		S0144: 1 and L0756: 1.
HMABD66	388074	8381	138 - 383	18133		AR061: 0, AR089: 0 S0144: 1
HLYNH64	970747	8382	26 - 397	18134		L0748: 3 and H0445: 1.
HLYNH40	710825	8383	125 - 256	18135	Gly-14 to His-20.	L0745: 1 and H0445: 1.
HLYHL55	731447	8384	213 - 443	18136		L0754: 1 and H0445: 1.
HLYHK64	746310	8385	87 - 215	18137	Asn-25 to Ile-30.	L0744: 1, L0748: 1 and H0445: 1.
HLYHK61	932994	8386	1 - 549	18138	Lys-61 to Ser-68, Ser-91 to Lys-96.	L0747: 2, L0748: 1, L0750: 1 and H0445: 1.
HLYHK34	703776	8387	298 - 519	18139	Lys-37 to Lys-71.	AR089: 1, AR061: 1 L0766: 1, L0754: 1 and H0445: 1.
HLYHJ37	708625	8388	257 - 421	18140	Pro-16 to Ser-22, Ala-32 to Lys-39.	L0439: 1 and H0445: 1.
HLYHI02	919201	8389	232 - 444	18141	Ile-17 to Ser-23, Gln-39 to Ser-57.	L0758: 1 and H0445: 1.
HLYHI05	953925	8390	424 - 20	18142	Asn-98 to Tyr-105, Lys-130 to His-135.	L0766: 1 and H0445: 1.
HLYHF62	743058	8391	89 - 277	18143	Asn-13 to Gln-18.	H0445: 1 and L0361: 1.
HLYHE85	784140	8392	294 - 506	18144	Ser-18 to Cys-33, Asn-36 to His-42.	L0766: 1 and H0445: 1.
HLYHA48	721372	8393	170 - 466	18145	Asn-1 to Pro-8, Leu-58 to Gln-64.	L0766: 5 and H0445: 1.
HLYHA04	614848	8394	83 - 229	18146	Ser-17 to Gly-22.	L0748: 2 and H0445: 1.
HLYGZ71	760115	8395	275 - 613	18147	Gly-8 to Leu-13, Pro-46 to Val-51, Leu-56 to Arg-64, Val-100 to Gln-110.	L0761: 1 and H0445: 1.
HLYGZ11	966503	8396	194 - 430	18148		L0598: 1, L0648: 1 and H0445: 1.
HLYGY60	740081	8397	119 - 397	18149		L0748: 2, L0766: 1, L0439: 1, L0750: 1, L0755: 1, H0445: 1 and L0601: 1.



HLXGW95	795682	8398	110 - 373	18150	Val-15 to Pro-20, Pro-41 to Leu-46, Leu-50 to Leu-57, Gly-63 to His-77, Ser-81 to Gly-87.	L0749: 1, L0777: 1 and H0445: 1.
	HLXGR56	733123	8399	481 - 636	18151	L0731: 1 and H0445: 1.
	HLXGQ29	689972	8400	91 - 213	18152	L0754: 2 and H0445: 1.
	HLXGQ11	966339	8401	45 - 194	18153	L0766: 1 and H0445: 1.
	HLXGM76	769835	8402	235 - 450	18154	H0445: 1 and L0362: 1.
	HLXGM08	958820	8403	110 - 3	18155	L0754: 1 and H0445: 1.
	HLXGJ76	685240	8404	388 - 564	18156	H0445: 1 and L0605: 1.
	HLXGH51	871634	8405	162 - 464	18157	AR089: 1, AR061: 0
	HLXGD69	754841	8406	108 - 302	18158	L0748: 1 and H0445: 1.
	HLXGB38	709187	8407	19 - 279	18159	L0753: 1 and H0445: 1.
	HLXFW38	709185	8408	114 - 392	18160	L0748: 2 and H0445: 1.
						H0445: 1.
	HLXFU24	856392	8409	362 - 532	18161	H0445: 1 and L0599: 1.
	HLXFR17	859567	8410	271 - 582	18162	L0747: 1 and H0445: 1.
	HLXFP56	871637	8411	173 - 391	18163	L0766: 3 and H0445: 1.
	HLXFO29	690381	8412	308 - 496	18164	H0445: 1 and L0596: 1.
	HLXFE11	966519	8413	103 - 276	18165	L0749: 1 and H0445: 1.
	HLXFD51	725116	8414	3 - 548	18166	L0157: 1, L0766: 1, L0439: 1 and H0445: 1.
	HLXFC54	729299	8415	91 - 249	18167	H0445: 1 and L0600: 1.
	HLXEV46	889678	8416	213 - 443	18168	L0788: 1 and H0445: 1.
		889804	9706	497 - 757	19458	
	HLXEV42	856395	8417	107 - 448	18169	L0748: 1 and H0445: 1.
	HLXET54	729406	8418	281 - 556	18170	L0748: 1 and H0445: 1.
	HLXET48	721501	8419	310 - 429	18171	L0439: 1 and H0445: 1.

HLYEY17	662764	8420	1 - 141	18172			L0748: 1 and H0445: 1.	
HLYES45	717640	8421	296 - 643	18173			L0439: 1 and H0445: 1.	
HLYPE59	739151	8422	228 - 536	18174			L0748: 2 and H0445: 1.	
HLYES083	781038	8423	214 - 477	18175	Ser-79 to Ile-88.		L0596: 2 and H0445: 1.	
HLYES037	708623	8424	399 - 551	18176	Thr-12 to Val-19.		L0748: 1 and H0445: 1.	
HLIEL71	760220	8425	296 - 550	18177	Arg-28 to Gln-36.		L0777: 1 and H0445: 1.	
HLIED44	716430	8426	3 - 353	18178	Lys-1 to Trp-7, Pro-31 to Ser-37, Pro-46 to Asn-61, Gly-81 to Thr-90.		L0753: 1 and H0445: 1.	
HLIEC21	670678	8427	2 - 163	18179	Cys-44 to Cys-50.		L0756: 1 and H0445: 1.	
HLIEB11	966748	8428	85 - 351	18180			L0748: 4 and H0445: 1.	
HLIEA92	561537	8429	5 - 115	18181	Asp-13 to Asp-18.		AR054: 16, AR050: 8, AR051: 1 H0445: 1	
HLIEA86	488801	8430	135 - 326	18182	Ser-9 to Ser-14, Phe-40 to Asn-45.		L0748: 1 and H0445: 1.	
HLIEA70	943886	8431	1 - 423	18183	Val-87 to Gln-93, Tyr-123 to Gln-130.		AR054: 15, AR050: 2, AR051: 1 H0445: 1	
HLIEA49	722787	8432	33 - 161	18184	Gln-21 to Ser-27.		H0445: 1 and L0599: 1.	
HLIEY72	761359	8433	275 - 478	18185			H0445: 1 and L0599: 1.	
HLIEX40	856401	8434	94 - 450	18186	Ser-56 to Asn-65, Lys-84 to Arg-91, Lys-114 to Ser-119.		L0740: 1 and H0445: 1.	
HLIDV57	800224	8435	72 - 152	18187	Leu-1 to Arg-6.		L0745: 1 and H0445: 1.	
HLIDU14	658035	8436	281 - 445	18188	Ser-47 to Gly-52.		L0748: 1 and H0445: 1.	
HLIDY727	856405	8437	262 - 453	18189	Leu-58 to Arg-64.		L0758: 2 and H0445: 1.	
HLIDY09	972424	8438	160 - 411	18190	Asp-58 to Ser-65.		H0445: 1	
HLIDYQ75	767176	8439	203 - 502	18191	Gln-15 to Leu-36, Lys-78 to Thr-85.		L0749: 1 and H0445: 1.	
HLIDOM45	717079	8440	3 - 224	18192			L0518: 5, L0748: 1 and H0445: 1.	
HLIDK95	973370	8441	140 - 376	18193	His-10 to Glu-16, Ser-23 to Cys-30.		H0445: 1	
HLIDI03	923826	8442	197 - 388	18194	Pro-9 to Val-22.		L0041: 1 and H0445: 1.	

HLYDG74	939025	8443	134 - 481	18195	Pro-31 to Gly-43.	L0438: 1, L0439: 1 and H0445: 1.	
HLYDG42	713579	8444	213 - 368	18196		L0748: 1 and H0445: 1.	
HLYDF07	952940	8445	120 - 290	18197		L0761: 1 and H0445: 1.	
HLYDD60	740212	8446	39 - 125	18198	Asn-15 to Asp-29.	L0766: 1 and H0445: 1.	
HLYDB08	959076	8447	20 - 160	18199	His-1 to Gly-9, Thr-13 to Trp-18, Asn-21 to Glu-26.	L0749: 1 and H0445: 1.	
HLYCX70	757087	8448	257 - 604	18200	Ala-8 to Ser-14, Pro-64 to Arg-69.	L0748: 3 and H0445: 1.	
HLYCX34	703910	8449	39 - 227	18201		L0748: 1 and H0445: 1.	
HLYCX18	943714	8450	2 - 412	18202	Arg-7 to Arg-16.	AR081: 113, AR089: 106 L0777: 1 and H0445: 1.	
HLYCX02	919563	8451	1 - 138	18203	Ser-29 to Gly-40.	L0731: 1 and H0445: 1.	
HLYCU59	679219	8452	229 - 405	18204	Thr-49 to Cys-58.	L0736: 2 and H0445: 1.	180297, 248611, 251000, 263200, 600211, 600701, 601690
HLYQC43	825509	8453	257 - 466	18205	Arg-64 to Arg-69.	H0445: 1	
HLYCP63	856424	8454	14 - 184	18206	Gly-15 to Thr-21.	L0523: 1 and H0445: 1.	
HLYCO03	923844	8455	157 - 387	18207	Glu-37 to Tyr-42.	L0777: 2, L0731: 2 and H0445: 1.	
HLYCM14	657589	8456	104 - 322	18208	Lys-7 to Arg-12, Phe-35 to Gly-54.	L0748: 1 and H0445: 1.	
HLYCL69	914887	8457	372 - 509	18209		L0748: 1 and H0445: 1.	103600, 103600, 103600, 104150, 104150, 104500, 125490, 170650
HLYCF51	725067	8458	172 - 396	18210	Glu-16 to Ser-34.	L0769: 2, L0666: 1, L0748: 1, L0747: 1, L0749: 1 and H0445: 1.	
HLYCF37	949401	8459	1018 - 1341	18211	His-1 to Gly-23, Arg-43 to Leu-50, Pro-52 to Glu-59, Leu-77 to Lys-108.	AR089: 31, AR061: 5 H0445: 1	

HLVCC19	668745	8460	229 - 369	18212	Arg-23 to Ser-31, Thr-41 to His-46.	L0748: 1 and H0445: 1.
HLVCB86	785544	8461	106 - 204	18213		L0754: 1 and H0445: 1.
HLVCB11	967162	8462	76 - 258	18214		L0731: 3, L0779: 1, H0445: 1 and L0362: 1.
HLVXB291	790234	8463	587 - 778	18215		L0766: 3 and H0445: 1.
HLVXB44	485853	8464	80 - 193	18216	Glu-22 to Cys-31.	H0445: 1
	516086	9707	293 - 448	19459	Ser-1 to Gln-9, Arg-20 to Tyr-34.	
HLVBN17	463988	8465	150 - 317	18217		L0766: 3 and H0445: 1.
HLVBN44	715879	8466	14 - 328	18218		L0742: 1 and H0445: 1.
HLVBI17	664101	8467	221 - 415	18219		H0445: 1 and L0599: 1.
HLVBH84	856444	8468	165 - 443	18220	Pro-67 to Ser-72, His-75 to Gln-86.	AR054: 14, AR051: 13, AR050: 0
						H0445: 1
HLVBH68	586582	8469	220 - 486	18221	Thr-40 to Ser-57.	AR050: 18, AR054: 11, AR051: 5
						H0445: 1
HLVGB85	783508	8470	1 - 246	18222	Asn-36 to Arg-46.	L0748: 1 and H0445: 1.
HLVBA50	880734	8471	2 - 232	18223	Thr-23 to Cys-39.	L0766: 2 and H0445: 1.
HLVBA06	935611	8472	295 - 441	18224		L0521: 1, L0766: 1 and H0445: 1.
HLVAX75	767225	8473	172 - 294	18225	Arg-25 to Leu-32.	H0445: 1
HLVAX32	699337	8474	129 - 200	18226	Thr-6 to Asp-19.	L0663: 1, H0445: 1 and L0599: 1.
HLVAX15	782335	8475	163 - 414	18227	Thr-25 to Ser-30.	L0748: 1, L0752: 1, L0758: 1 and H0445: 1.
HLVAS35	856469	8476	96 - 293	18228		H0445: 1 and L0592: 1.
HLVAR25	678179	8477	205 - 378	18229	Thr-32 to Lys-58.	L0777: 1 and H0445: 1.
HLVAX02	792770	8478	169 - 303	18230	Asp-33 to Gln-40.	L0740: 1 and H0445: 1.
HLVAX70	757235	8479	220 - 483	18231		L0748: 4 and H0445: 1.
HLVAX09	754729	8480	1 - 267	18232	Thr-50 to Ile-55.	L0754: 1 and H0445: 1.
HLVAN68	815950	8481	182 - 337	18233		H0445: 1
HLVAN21	854034	8482	126 - 302	18234	Lys-6 to Ser-17.	H0445: 1
HLVAN10	964834	8483	369 - 521	18235		L0761: 1, L0517: 1, H0445: 1

HLVAL58	736097	8484	433 - 606	18236			1 and L0599: 1.
HLVAL22	856473	8485	214 - 456	18237	Ser-1 to Asp-6, Gly-60 to Gly-66.		L0439: 2 and H0445: 1.
HLVAL11	967173	8486	100 - 294	18238	Gln-35 to Phe-47, Glu-55 to Glu-64.		L0369: 1 and H0445: 1.
HLVAK36	708028	8487	192 - 356	18239			L0766: 1, L0606: 1 and H0445: 1.
HLVAK34	421604	8488	36 - 164	18240			L0749: 1, H0445: 1 and L0599: 1.
HLVJA49	723039	8489	150 - 383	18241			L0745: 7, L0746: 3 and H0445: 1.
HLVAG59	888232	8490	157 - 441	18242	Ile-6 to Met-21.		L0483: 1, L0750: 1 and H0445: 1.
HLTHS37	708613	8491	205 - 432	18243	Asp-1 to Asn-15, Pro-31 to Gly-41.		AR051: 9, AR050: 3 H0445: 1
HLTHS02	856560	8492	23 - 217	18244	Phe-42 to Thr-49, Ile-51 to Ser-56.		L0748: 2 and H0591: 1.
HLTHC37	708620	8493	172 - 453	18245	Ser-21 to Glu-27, Asp-38 to Asn-45.		H0591: 1 and L0748: 1.
HLTGT83	780903	8494	23 - 199	18246			H0591: 1, L0659: 1 and L0439: 1.
HLTGT36	708027	8495	516 - 740	18247			H0591: 1 and L0439: 1. L0796: 2, L0747: 2, H0591: 1 and L0791: 1.
HLTGS17	662409	8496	350 - 502	18248	Pro-5 to Asn-12.		H0591: 1 and L0748: 1.
HLTGR28	693990	8497	1 - 231	18249			H0591: 1 and L0748: 1.
HLTGP47	719975	8498	182 - 379	18250	Gln-36 to Arg-52.		H0591: 1 and L0604: 1.
HLTGO89	786674	8499	1 - 129	18251	Thr-24 to Ala-30.		H0591: 1 and L0439: 1.
HLTGN92	791185	8500	153 - 242	18252			L0748: 3 and H0591: 1.
HLTGA40	710728	8501	153 - 413	18253			L0758: 2, H0591: 1 and L0439: 1.
HLTEZ30	960911	8502	209 - 331	18254	Leu-18 to Asp-33.		L0748: 2 and H0090: 1.
HLTEZ19	671610	8503	2 - 172	18255	Ser-2 to Arg-7, Leu-48 to Trp-54.		L0748: 2, L0749: 2, H0090: 1, L0756: 1 and L0758: 1.
HLTEX27	927578	8504	163 - 327	18256	Pro-27 to Asp-33.		H0090: 1 and L0748: 1.
HLTEV66	772965	8505	1 - 192	18257	Lys-19 to Asn-38.		H0090: 1 and L0731: 1.

HLTEP45	723375	8506	289 - 426	18258	Arg-1 to Lys-12.	H0090: 1 and L0362: 1.	
HLTEM25	678685	8507	2 - 190	18259	Cys-3 to Lys-11, Ile-30 to Phe-36.	H0090: 1 and L0766: 1.	
HLTEG51	494330	8508	597 - 298	18260		H0090: 1	
	514122	9708	169 - 435	19460			
HLTEG37	417243	8509	2 - 253	18261	Ser-58 to Gly-64.	H0090: 1 and L0789: 1.	
HLTEC83	574630	8510	52 - 165	18262	Asp-5 to Gly-11.	H0090: 1	
HLTEC35	574632	8511	131 - 247	18263	Asn-13 to Pro-21.	H0090: 1	
HLTEA20	669900	8512	298 - 594	18264	Ser-14 to Pro-19.	L0749: 2, H0090: 1, L0438: 1 and L0758: 1.	
HLTDR43	715529	8513	3 - 140	18265	Tyr-8 to Leu-19.	L0438: 2, L0754: 2, H0090: 1, L0803: 1, L0352: 1 and L0439: 1.	
HLTDI17	577379	8514	370 - 603	18266		H0090: 1, L0766: 1, L0745: 1, L0747: 1 and L0779: 1.	
HLTDH96	796560	8515	165 - 287	18267		H0090: 1 and L0748: 1.	250100, 250800, 250800
HLTDG59	739699	8516	68 - 352	18268		H0090: 1 and L0748: 1.	
HLTDG30	693329	8517	3 - 119	18269	Cys-10 to Pro-16, Glu-34 to Pro-39.	H0090: 1 and L0746: 1.	
HLTDB38	456860	8518	262 - 432	18270		L0748: 2 and H0090: 1.	
HLTCZ55	732385	8519	142 - 270	18271	Pro-38 to Ser-43.	H0090: 1 and L0758: 1.	
HLTCX39	705648	8520	1 - 336	18272		H0090: 1 and L0596: 1.	
HLTCT77	772458	8521	165 - 368	18273		H0090: 1 and L0745: 1.	1p21 102770, 120280, 120280, 166600, 170995, 232400, 232400, 600309, 601414, 601691, 601691, 601691, 601691, 601718, 602094
HLTCR77	772457	8522	154 - 303	18274		H0090: 1 and L0745: 1.	
HLTCR11	967559	8523	3 - 200	18275	Pro-54 to Lys-61.	H0090: 1 and L0363: 1.	
HLTCM59	442563	8524	2 - 208	18276		H0090: 1	
	739501	9709	26 - 241	19461	Lys-11 to Ser-16.		
HLTCI43	715530	8525	3 - 335	18277	Thr-16 to Arg-23.	H0090: 1 and L0439: 1.	

HLTC11	967541	8526	152 - 295	18278	Ser-35 to Leu-51, Arg-62 to Thr-75, Ser-80 to Ser-88.			
HLTCH41	507362	8527	93 - 365	18279	Gln-1 to Ser-6, Gln-23 to Phe-31, Lys-9 to Leu-21, Asn-49 to Arg-55, Gly-62 to Ser-69.	H0090: 1, L0769: 1 and L0758: 1. H0090: 1 and L0754: 1.		
HLTBU47	720662	8528	235 - 354	18280	Lys-6 to Ser-13, Arg-29 to Arg-48, Val-50 to Ser-56.	H0090: 1 and L0748: 1. H0090: 1		
HLTBU44	522741	8529	175 - 447	18281				
HLTBS07	954407	8530	2 - 106	18282		H0090: 1 and L0659: 1.		
HLTBF58	735194	8531	157 - 354	18283		H0090: 1 and L0745: 1.		
HLTBF56	907024	8532	302 - 526	18284	Asn-36 to Arg-48.	L0766: 3 and H0090: 1.		
HLTBA68	753857	8533	241 - 420	18285	Tyr-1 to Lys-6.	L0439: 2, H0090: 1 and L0745: 1.		
HLTBA41	712721	8534	273 - 491	18286	Tyr-44 to Asn-52, Ser-64 to Gln-69.	L0748: 2, H0090: 1 and L0749: 1.		
HLTBA35	707243	8535	124 - 378	18287	Lys-17 to Ser-30, Gln-44 to Glu-52.	H0090: 1 and L0731: 1.		
HLTAM07	954419	8536	3 - 215	18288	Ser-7 to Pro-13.	H0090: 1, L0766: 1 and L0776: 1.		
HLTAK57	735163	8537	1 - 90	18289	Thr-24 to Ser-30.	H0090: 1 and L0756: 1.		
HLTAA39	710361	8538	444 - 647	18290	Cys-1 to Trp-6.	L0740: 2, H0090: 1, L0439: 1 and L0777: 1.		
HLTAA27	684649	8539	3 - 92	18291		L0754: 3 and H0090: 1.		
HLMN001	916641	8540	223 - 366	18292		H0255: 1 and L0766: 1.		
HLMNQ18	666544	8541	245 - 442	18293		L0749: 3 and H0255: 1.		
HLMMZ09	575837	8542	151 - 324	18294	Gly-1 to Trp-17, Ala-51 to Tyr-58.	H0255: 1		
HLMMI20	830074	8543	80 - 166	18295		L0748: 2, H0255: 1, L0471: 1 and L0766: 1.		
HLMMR90	575905	8544	1 - 522	18296	Gly-1 to Ser-8, Leu-21 to Gly-30.	AR051: 30, AR050: 30, AR054: 20 H0255: 1 and L0599: 1.		

HLMK61	532605	8545	506 - 129	18297	Gln-9 to Trp-15, Thr-45 to Lys-50, Gln-61 to Leu-66, Trp-79 to Val-87.	AR051: 38, AR054: 35, AR050: 33 H0255: 1	
	856817	9710	197 - 3	19462			
	856818	9711	3 - 263	19463	Cys-1 to Gly-8, Gln-13 to Trp-19, Thr-49 to Lys-54, Gln-65 to Leu-70.		
HLMK50	724485	8546	1 - 207	18298		H0255: 1, L0534: 1 and L0757: 1.	
HLMF94	811320	8547	158 - 352	18299	Pro-9 to Lys-16.	H0255: 1 and L0754: 1.	
HLMF01	916816	8548	38 - 382	18300		H0255: 1 and L0766: 1.	
HLMF43	714439	8549	198 - 542	18301	Ser-20 to Arg-25, Gly-51 to Leu-58, Leu-84 to Glu-90.	L0748: 4, H0255: 1, L0761: 1, L0768: 1 and L0747: 1.	
HLMY59	878870	8550	153 - 356	18302	Val-39 to Asn-49.	H0255: 1	
HLMG57	835799	8551	209 - 451	18303	Ala-6 to Gln-19, Ser-49 to Leu-56.	AR054: 19, AR050: 10, AR051: 2	
HLMHW80	775382	8552	177 - 446	18304	Pro-1 to Lys-6, Gly-27 to Lys-42.	H0255: 1 and L0754: 1. H0255: 1 and L0581: 1.	
HLMHT61	742044	8553	246 - 398	18305		H0255: 1 and L0754: 1.	
HLMHT49	722191	8554	253 - 411	18306		AR050: 11, AR054: 10, AR061: 6, AR089: 3, AR051: 3	
HLMHL66	910804	8555	1 - 252	18307	Pro-32 to Ser-39.	H0255: 1	
HLMHL03	856859	8556	183 - 1	18308	Lys-1 to Lys-15, Gln-50 to Arg-61.	H0255: 1 and L0603: 1.	
HLMFU46	718075	8557	276 - 443	18309	Arg-14 to Arg-21.	H0255: 1 and L0747: 1.	
HLMFL88	574812	8558	1 - 756	18310	Ala-61 to Glu-70, Pro-90 to Arg-98.	H0255: 1	
HLMFG79	974552	8559	49 - 234	18311	Thr-23 to Gly-29.	H0255: 1	
HLMFE91	531212	8560	3 - 434	18312		H0255: 1	
HLMFE79	531213	8561	190 - 402	18313		H0255: 1	



HLMPF17	531218	8562	2 - 151	18314		H0255: 1	
HLMPD62	754076	8563	140 - 289	18315	Pro-2 to Ser-7, Glu-26 to Pro-31.	L0439: 3 and H0255: 1.	
HLMDX01	921546	8564	160 - 414	18316		H0254: 1, L0748: 1 and L0777: 1.	
HLMDH08	960055	8565	1 - 258	18317	Glu-13 to Ser-22, Ser-34 to Pro-39, Lys-50 to Gly-61, Leu-63 to Gly-68.	L0748: 4, L0770: 2, H0254: 1, L0749: 1, L0777: 1 and L0599: 1.	
HLMDC26	684911	8566	132 - 377	18318	Gly-20 to Lys-32.	H0254: 1 and L0740: 1.	
HLMLC19	529908	8567	59 - 238	18319	Glu-22 to Leu-31.	L0748: 2 and H0254: 1.	
HLMCJ55	741635	8568	3 - 344	18320	Pro-14 to Gly-21, Asp-24 to His-30, Ala-36 to Ala-51.	H0254: 1, L0756: 1 and L0758: 1.	
HLMBX91	879359	8569	94 - 627	18321	Pro-6 to Ser-15, Pro-87 to Arg-105, Gly-165 to Ala-170.	AR051: 13, AR054: 9, AR050: 3 H0255: 1	
HLMBQ54	730952	8570	94 - 369	18322	Arg-9 to Ser-26, Cys-55 to Lys-60.	H0255: 1 and L0748: 1.	
HLMBQ48	560848	8571	175 - 336	18323	Ser-39 to Arg-52.	H0255: 1	
HLMBN04	615620	8572	84 - 254	18324	Ser-39 to Arg-52.	H0255: 1 and L0439: 1.	
HLMAV56	733708	8573	305 - 553	18325		L0777: 2 and H0254: 1.	
HLMAI82	523694	8574	3 - 113	18326		H0254: 1	
HLMAE86	852563	8575	88 - 291	18327		H0254: 1, L0766: 1, L0755: 1 and L0731: 1.	
HLLCD85	783454	8576	3 - 527	18328	Pro-2 to Asp-13, Pro-30 to Glu-37, Pro-56 to Lys-76, Lys-83 to Ile-98, Gly-105 to Ser-113, Glu-147 to Glu-152, Asp-154 to Lys-175.	H0354: 1, L0747: 1, L0750: 1 and L0591: 1.	
HLKDC76	953502	8577	157 - 867	18329		H0611: 1, L0740: 1, L0593: 1 and L0601: 1.	143890, 151440, 600173, 600276, 600310, 600310

HLKDB78	773172	8578	105 - 278	18330	Ser-30 to Arg-39.	L0439: 2, H0611: 1 and L0756: 1.	601604, 601843
HLKDB02	918870	8579	126 - 269	18331	Lys-19 to Arg-36.	H0611: 1 and L0605: 1.	
HLEAN30	843294	8580	161 - 328	18332	Tyr-1 to Tyr-6.	H0073: 1	
	886013	9713	235 - 633	19465	Phe-43 to Met-48, Phe-89 to Trp-95, Ser-118 to Thr-130.		
HLCD67	887375	8581	1 - 633	18333		AR054: 3, AR089: 2, AR061: 2, AR051: 1, AR050: 1 H0607: 1	
HKBBV11	965170	8582	237 - 398	18334	Ser-1 to Val-6, Gln-23 to Trp-33, Phe-36 to Arg-41.	L0471: 1 and H0625: 1.	
HKBBP05	928316	8583	34 - 171	18335		H0625: 1, L0761: 1 and L0748: 1.	
HKBAL06	934160	8584	265 - 540	18336		L0535: 2, H0625: 1 and L0759: 1.	
HKBAJ12	909644	8585	273 - 497	18337		L0766: 5 and H0625: 1.	
HKBA02	918568	8586	522 - 226	18338		H0625: 1 and L0764: 1.	
HJUBA39	888006	8587	170 - 478	18339	His-26 to Leu-34, Pro-41 to Thr-54, Asp-64 to Ser-69.	AR051: 97, AR050: 79, AR054: 77 L0748: 3, H0129: 1, L0438: 1, L0439: 1, L0747: 1, L0749: 1, L0756: 1 and L0777: 1.	
HJTRB51	470587	8588	428 - 252	18340		H0022: 1 and L0766: 1.	
	618324	9714	261 - 443	19466			
	724786	9715	269 - 463	19467	Ser-7 to Met-12.		
	724787	9716	367 - 534	19468			
HJPDK80	418622	8589	726 - 914	18341	Pro-16 to Ser-28.	L0766: 2, L0749: 2, H0083: 1, L0777: 1 and L0590: 1.	
HJPDK57	768274	8590	1 - 195	18342	Pro-51 to Ser-56.	H0083: 1	
	857395	9717	597 - 860	19469			
HJPD116	518105	8591	13 - 237	18343	Pro-1 to Pro-17.	H0083: 1 and L0666: 1.	

HJPDE23	574115	8592	45 - 212	18344			H0083: 1		
HJPPD82	857401	8593	475 - 639	18345		Ser-30 to Asn-36.	L0748: 3, L0777: 2, H0083: 1, L0775: 1, L0744: 1, L0759: 1 and L0592: 1.		
HJPCW09	536677	8594	1 - 186	18346			H0083: 1	1q32.1	134580, 145260, 600105, 600759, 601975
HJPCV54	733607	8595	129 - 434	18347			H0083: 1 and L0751: 1.	17qter	
HJPCS54	871807	8596	473 - 619	18348			H0083: 1 and L0750: 1.		
HJBP22	577455	8597	2 - 145	18349		Arg-39 to Arg-44.	H0083: 1	10q23-q24	157640, 174900, 180250, 186770, 236730, 271245, 278000, 278000, 600095, 600512, 601107, 601130, 601493, 602082
HJPBA04	615385	8598	172 - 423	18350			H0083: 1 and L0608: 1.		
HJPAZ91	882668	8599	1 - 522	18351		Ile-23 to Gly-28, Val-30 to Lys-35.	H0083: 1, L0740: 1, L0754: 1 and L0745: 1.		
HJPAY56	909242	8600	3 - 212	18352			AR061: 4, AR089: 3		
HJPAX11	967599	8601	367 - 483	18353			H0083: 1 and L0593: 1.		
HJPAT79	781697	8602	2 - 325	18354		Thr-4 to Thr-18, Leu-33 to Arg-43, Pro-66 to Gly-79.	H0083: 1, L0803: 1 and L0748: 1.		
HJPAG38	709103	8603	222 - 371	18355		Tyr-39 to Gly-44.	H0083: 1 and L0731: 1.		
HJPAAG0	586675	8604	3 - 536	18356		Ile-73 to Thr-80, Asn-125 to Gln-136.	L0600: 3 and H0083: 1.		
							AR054: 9, AR089: 1, AR050: 1, AR061: 1, AR051: 0		
							L0731: 2 and H0083: 1.		
HJHSC56	578366	8605	248 - 421	18357			H0202: 1		
HJHDM21	793381	8606	60 - 383	18358		Asn-54 to Gln-60, Phe-92 to Arg-98.	L0748: 2 and T0042: 1.		
HJBOL70	757378	8607	65 - 709	18359		Phe-50 to Ser-58.	L0439: 2 and T0042: 1.		
HJBDG36	607769	8608	347 - 87	18360		Pro-34 to Tyr-46.	T0042: 1		

	857433	9718	1 - 222	19470		
	895313	9719	527 - 778	19471		
	902075	9720	1098 - 1544	19472		
HJBD63	745286	8609	214 - 423	18361	Ile-1 to Arg-12, Arg-14 to Thr-19.	T0042: 1 and L0604: 1.
HJBD11	967480	8610	470 - 700	18362	Leu-2 to Cys-13, Ser-32 to Cys-39.	L0777: 2, L0752: 2, T0042: 1, L0659: 1 and L0731: 1.
HJBCZ05	925805	8611	19 - 867	18363	Arg-1 to Pro-8, Ala-33 to Ala-39.	T0042: 1 and L0740: 1.
HJBCM55	732411	8612	163 - 456	18364	Leu-5 to Gly-10, Pro-31 to Cys-52.	T0042: 1 and L0748: 1.
HJBBG54	728810	8613	415 - 570	18365	Ile-1 to Ser-10, Gln-43 to Asp-49, Thr-118 to Thr-124, Ala-141 to Thr-146, Ser-155 to Glu-160.	L0777: 2 and T0042: 1.
HJBBF02	921242	8614	1 - 630	18366	Thr-23 to Lys-31.	L0599: 2, T0042: 1 and L0748: 1.
HJBBE51	725948	8615	86 - 244	18367	Pro-1 to Arg-10, Pro-13 to Arg-19.	T0042: 1 and L0748: 1.
HJBBE07	954376	8616	325 - 471	18368	Pro-22 to Pro-29.	T0042: 1 and L0753: 1.
HJBD59	739633	8617	61 - 240	18369		L0439: 2 and T0042: 1.
HJBAP94	796835	8618	127 - 330	18370		L0591: 2, T0042: 1 and L0748: 1.
HJACI60	577525	8619	84 - 233	18371		T0041: 1, L0740: 1 and L0754: 1.
HJACH13	660943	8620	11 - 175	18372		L0439: 3, L0758: 3, L0779: 2, T0041: 1, L0771: 1, L0766: 1, L0803: 1, L0438: 1 and L0749: 1.
HJABZ11	967665	8621	242 - 448	18373	Val-1 to Ser-8.	L0759: 2 and T0041: 1.
HJABX39	709556	8622	189 - 656	18374	Pro-10 to Asn-16, Ser-63 to Glu-69, Ala-73 to Cys-79, Phe-83 to Thr-89, Trp-106 to Arg-120.	L0747: 2 and T0041: 1.
HJABQ75	567249	8623	498 - 836	18375	Ser-1 to Ala-10.	T0041: 1

HJABK64	783237	8624	1 - 567	18376	Leu-51 to His-71, Glu-79 to Gly-93.	L0740: 4 and T0041: 1.	
HJABK16	667399	8625	178 - 327	18377	Pro-10 to Glu-18, Leu-94 to Pro-100, Ser-106 to Asp-117, Thr-155 to Gly-162, Ser-169 to Val-178.	T0041: 1 and L0766: 1.	
HJABB93	791435	8626	40 - 303	18378	Leu-2 to Asn-11, Glu-24 to Ser-32, Gln-1 to Gly-7, Pro-43 to Glu-61, Cys-68 to Trp-76.	L0748: 2, T0041: 1 and L0756: 1.	
HJAAZ32	699727	8627	92 - 214	18379	Pro-8 to Ala-26.	T0041: 1, L0790: 1, L0748: 1, L0745: 1 and L0759: 1.	
HJAAV85	783412	8628	76 - 183	18380		T0041: 1	
HJAAR02	921105	8629	111 - 269	18381		T0041: 1 and L0784: 1.	
HJAAO07	954263	8630	1 - 186	18382		T0041: 1 and L0385: 1.	
HJAAC22	779388	8631	236 - 409	18383	Met-1 to Pro-7.	T0041: 1 and L0439: 1.	
HJAAA83	928841	8632	241 - 432	18384	Lys-15 to Ser-29, Pro-34 to Pro-53.	L0777: 2, T0041: 1 and L0601: 1.	
HILBQ12	971556	8633	247 - 360	18385		T0002: 1 and L0766: 1.	
HILBC32	906873	8634	3 - 281	18386		L0748: 2 and T0002: 1.	
HILBC17	667204	8635	25 - 285	18387		L0777: 2 and T0002: 1.	
HHEZZ74	934486	8636	542 - 1630	18388	Glu-42 to Ser-70.	L0779: 2, L0800: 1, L0662: 1, L0740: 1, L0596: 1 and H0543: 1.	
HHEZT12	969437	8637	1 - 177	18389	Gln-1 to Lys-8, Val-12 to Cys-17, Met-32 to Phe-38, Pro-40 to Tyr-45.	L0769: 1 and H0543: 1.	
HHEZO92	942859	8638	1 - 546	18390	Val-18 to Trp-24, Ala-64 to Asp-69, Asn-88 to Arg-96, Ser-131 to Gly-137, Gly-150 to Thr-155, Gly-166 to Gly-174.	AR089: 15, AR061: 9 L0639: 1, L0748: 1, L0751: 1 and H0543: 1.	

HHEZN61	973136	8639	429 - 689	18391	Cys-8 to Pro-15, Pro-17 to Leu-23.	H0543: 1	
HHEVE64	973232	8640	329 - 601	18392	Tyr-2 to Gln-7.	H0543: 1	
HHEX005	930794	8641	972 - 1679	18393	Asp-14 to Gln-25, Tyr-109 to Pro-115, Pro-122 to Gly-127, Thr-142 to Lys-147, Leu-149 to Tyr-164.	L0743: 2, L0750: 1, L0759: 1 and H0543: 1.	
HHEWX08	974405	8642	271 - 474	18394	Ser-51 to Pro-60.	H0543: 1	
HHEWX06	933879	8643	77 - 172	18395	Thr-18 to Ile-23.	L0785: 1, L0748: 1 and H0543: 1.	
HHEWT49	973142	8644	109 - 333	18396	Ser-23 to Ala-32, Gln-45 to Phe-52.	H0543: 1	
HHEWS01	914746	8645	241 - 414	18397		L0749: 1 and H0543: 1.	
HHEWQ10	963039	8646	2 - 121	18398	Gly-1 to Gly-6.	L0748: 1, L0749: 1 and H0543: 1.	
HHEWM53	973150	8647	170 - 382	18399	Leu-23 to Ser-35, Pro-66 to Ala-71.	H0543: 1	
HHEWG06	933874	8648	176 - 310	18400	Thr-13 to Phe-18, Asp-22 to Gly-29.	L0748: 1 and H0543: 1.	
HHEVZ06	933891	8649	2 - 193	18401	Asn-10 to His-15.	L0748: 1 and H0543: 1.	
HHEUJ76	906956	8650	544 - 227	18402		L0439: 1 and H0543: 1.	
HHEUP68	973215	8651	308 - 622	18403	Glu-27 to Asp-33, Glu-44 to Leu-51, Thr-59 to Pro-74.	H0543: 1	
HHEUL05	931045	8652	376 - 483	18404	Leu-1 to Ser-6.	L0438: 1 and H0543: 1.	
HHEUD79	774157	8653	3 - 230	18405	Asn-50 to Gly-56.	L0754: 1, L0756: 1 and H0543: 1.	
HHETR81	836730	8654	2 - 718	18406	Gly-1 to Ser-6, Pro-8 to Lys-16, Arg-67 to Cys-84, His-99 to Tyr-107, Met-133 to Cys-138, Pro-164 to Lys-170, Thr-172 to Lys-178.	L0766: 1 and H0543: 1.	
HHETP07	952217	8655	209 - 364	18407	Gly-32 to Phe-39.	L0608: 1 and H0543: 1.	

HHETN89	786361	8656	562 - 687	18408	Glu-11 to Gly-16.	L0747: 1 and H0543: 1.	
HHETN03	923009	8657	306 - 485	18409	Arg-55 to His-60.	L0659: 1 and H0543: 1.	
HHETK38	973120	8658	112 - 369	18410	Arg-1 to Ala-10, Arg-37 to Ser-44, Ser-54 to Asn-61.	H0543: 1	
HHETH36	901275	8659	212 - 424	18411	Gln-1 to Asp-30.	AR050: 13, AR054: 11, AR051: 3	
HHESV83	780456	8660	3 - 122	18412	Glu-1 to Gly-9.	H0543: 1	
HHESV71	806332	8661	1 - 225	18413		H0543: 1	
HHESV93	791729	8662	281 - 436	18414		L0756: 2, L0742: 1 and H0543: 1.	
HHESQV46	718640	8663	2 - 286	18415	Lys-15 to Leu-27, Pro-29 to Trp-37, Lys-39 to Glu-54, Gly-61 to Ser-91.	L0766: 1, L0749: 1, L0755: 1 and H0543: 1.	
HHESQT07	952452	8664	1523 - 1738	18416	Gly-8 to Lys-18, Gly-22 to Thr-28, Gly-49 to Ser-54, Gln-56 to Phe-63, Glu-65 to Arg-72.	L0763: 1 and H0543: 1.	
HHESQ75	973104	8665	2 - 307	18417	Arg-15 to Arg-21, Leu-54 to Ser-62, Ser-73 to Phe-81, Glu-91 to Lys-102.	H0543: 1	
HHESQL50	723930	8666	215 - 469	18418		L0592: 1 and H0543: 1.	
HHESQ53	727812	8667	524 - 703	18419		L0754: 2 and H0543: 1.	
HHESQ22	723305	8668	215 - 370	18420	Thr-14 to Gly-23, Lys-19 to Phe-35.	L0764: 1, L0745: 1 and H0543: 1.	17q11 147557, 600881, 601954
HHESQ89	786603	8669	229 - 387	18421	Lys-19 to Tyr-28.	L0766: 1 and H0543: 1.	
HHESQ26	679505	8670	344 - 466	18422	Lys-31 to Val-40.	L0749: 1 and H0543: 1.	
HHESQ89	738866	8671	196 - 324	18423	Lys-1 to Glu-11.	L0439: 1 and H0543: 1.	
HHESQ823	675500	8672	26 - 157	18424		L0773: 1, L0748: 1 and H0543: 1.	
HHESPW95	588266	8673	2 - 181	18425	Ser-52 to Arg-58.	H0543: 1	
HHESPW40	588265	8674	152 - 298	18426		H0543: 1	

HHPEPW11	966789	8675	161 - 322	18427			H0543: 1	
HHPEPT05	912266	8676	2104 - 2349	18428		Lys-25 to Gln-34.	L0439: 1 and H0543: 1.	
	971711	9721	350 - 174	19473				
	971712	9722	307 - 414	19474				
	971713	9723	425 - 180	19475		Lys-25 to Gln-34.		
	971714	9724	288 - 61	19476		Phe-23 to Gln-48.		
						Lys-56 to Gly-61.		
HHPEPT03	923410	8677	41 - 355	18429		Ser-7 to Ser-14.	H0543: 1	
HHPEPT01	588241	8678	1 - 249	18430		Leu-53 to Trp-64.	L0752: 1 and H0543: 1.	
HHPEPM69	588235	8679	279 - 386	18431			H0543: 1	
HHPEPG62	877268	8680	179 - 361	18432		Gln-38 to Asn-44.	L0439: 2, L0777: 2, L0394: 1, L0438: 1, L0744: 1, L0754: 1, L0779: 1, L0753: 1, L0759: 1 and H0543: 1.	
HHPEGS9	925436	8681	274 - 474	18433		Phe-7 to Asn-14.	L0748: 1, L0747: 1 and H0543: 1.	
HHPEPF21	956241	8682	217 - 357	18434			L0803: 1 and H0543: 1.	
HHPEOG81	588155	8683	210 - 365	18435		Gln-19 to Asp-27.	L0755: 1 and H0543: 1.	
HHPEOAG3	744995	8684	11 - 313	18436			L0748: 3 and H0543: 1.	
HHENY02	919775	8685	206 - 373	18437		Ile-7 to Cys-13.	L0386: 1 and H0543: 1.	
HHENW11	887661	8686	1 - 228	18438		Gln-26 to Lys-38, Ser-55 to Gln-63.	AR050: 71, AR054: 58, AR051: 53 H0543: 1	
HHENQ08	959262	8687	68 - 259	18439		Thr-44 to Pro-55.	L0748: 2 and H0543: 1.	
HHENK21	858290	8688	2 - 310	18440		Pro-44 to Ser-51.	L0763: 1 and H0543: 1.	
HHENJ29	690576	8689	1 - 306	18441		Asp-4 to Gln-13, Val-22 to Gly-31, Gln-50 to Asp-63, Arg-70 to Asp-75, Ser-88 to Gly-94.	L0750: 1 and H0543: 1.	
HHEND53	728111	8690	196 - 486	18442		His-54 to Ala-59, Ser-64 to Asn-70.	L0439: 1 and H0543: 1.	
HHENC71	757844	8691	142 - 387	18443		Leu-70 to Ser-82.	L0747: 1 and H0543: 1.	
HHENZ66	586737	8692	2 - 364	18444		Pro-14 to Ala-29, Gln-50 to Thr-55.	AR050: 326, AR054: 257, AR051: 188 H0543: 1	



HHMW78	773507	8693	738 - 541	18445	Gln-42 to Met-64.	L0766: 1 and H0543: 1. L0748: 2 and H0543: 1. H0543: 1		
HHMW01	916281	8694	3 - 161	18446				
HHMQ68	752326	8695	22 - 123	18447				
HHMQ48	493733	8696	287 - 111	18448		AR050: 99, AR054: 97, AR051: 82 H0543: 1		
	839526	9725	1 - 162	19477	Pro-22 to Gln-33.			
	887668	9726	1 - 216	19478	Thr-33 to Gly-40, Pro-59 to Leu-64, Thr-66 to Lys-72.			
HHMN37	708468	8697	2 - 217	18449	Tyr-1 to Ser-11.	H0543: 1		
HHMK77	772115	8698	3 - 104	18450	Thr-6 to Asp-11, Thr-24 to Lys-34.	H0543: 1		
HHMK26	681595	8699	120 - 470	18451	Pro-38 to Pro-44, Gln-65 to Ala-73.	H0543: 1		
HHMJ91	789443	8700	233 - 445	18452	Lys-25 to Lys-34.	L0747: 4, L0439: 1, L0362: 6p21.3-p21.2 1 and H0543: 1.	106300, 108800, 120290, 120290, 120810, 120820, 142857, 142858, 150270, 167250, 170261, 177900, 179450, 201910, 217000, 222100, 233100, 235200, 248611, 256550, 256550, 600202, 600261, 601690, 601868, 602280, 602475	
HHMI69	755006	8701	371 - 174	18453	Pro-2 to Lys-12.	H0543: 1		
HHMI56	469030	8702	257 - 66	18454	Gln-1 to Lys-13, Asp-54 to Asp-62.	H0543: 1		
HHMI09	625459	8703	1 - 174	18455	Ser-27 to Gly-34, Ser-49 to Gln-54.	H0543: 1		
HHMG02	917366	8704	325 - 122	18456		L0769: 1 and H0543: 1.		
HHMG01	916297	8705	121 - 270	18457	Gln-23 to Val-33.	H0543: 1		

HHMD56	733353	8706	2 - 292		Gly-44 to His-50. Leu-12 to Ser-17.	18458	L0766: 1, L0748: 1 and H0543: 1.	
HHMC41	927255	8707	269 - 42		Val-14 to Gln-19.	18459	L0747: 2, L0753: 2, L0731: 2, L0750: 1 and H0543: 1.	
HHMC10	969380	8708	309 - 596		Asn-1 to Glu-7, Ile-70 to Trp-82.	18460	AR050: 98, AR054: 85, AR051: 82, AR089: 28, AR061: 3 H0543: 1	
HHMA35	467295	8709	390 - 623		Thr-1 to Lys-9, Gln-60 to Pro-65.	18461	L0748: 1 and H0543: 1.	
HHMA07	953200	8710	190 - 369			18462	L0439: 2, L0804: 1, L0777: 1, L0731: 1 and H0543: 1.	
HHLA35	878217	8711	25 - 462		Phe-62 to Arg-67, Gln-92 to Leu-104.	18463	AR089: 1, AR061: 0 H0542: 1	
HHKZ12	878267	8712	9 - 395		Phe-62 to Arg-67, Gln-92 to Leu-104.	18464	AR089: 1, AR061: 0 H0542: 1	
HHK170	935092	8713	39 - 215		Phe-1 to Ser-8, Glu-45 to Met-53.	18465	L0754: 1, L0747: 1 and H0542: 1.	
HHJR35	878223	8714	1 - 249		Ser-16 to Gln-22.	18466	L0745: 2 and H0542: 1.	
HHHK04	925717	8715	1 - 621		Cys-12 to Gly-19, Gly-28 to Leu-35, Lys-37 to His-42.	18467	L0777: 5 and H0542: 1.	
HHHG38	943785	8716	2 - 583			18468	AR061: 5, AR089: 4 L0779: 1, L0777: 1 and H0542: 1.	
HHGC05	930878	8717	124 - 258		Gln-10 to Arg-17, Pro-34 to Tyr-45.	18469	L0752: 1 and H0542: 1.	
HHFN76	767770	8718	1 - 267		Lys-1 to Lys-8, Arg-22 to Leu-27.	18470	L0748: 2 and H0542: 1.	
HHFM41	711954	8719	580 - 738		Arg-1 to Arg-20, Tyr-31 to His-36.	18471	L0586: 1 and H0542: 1.	
HHFY63	744592	8720	400 - 537			18472	L0759: 1 and H0542: 1.	
HHDN70	757106	8721	1 - 390		Thr-63 to Phe-68, Asp-78 to Pro-85.	18473	L0593: 1 and H0542: 1.	
HHEDN51	734118	8722	205 - 354		Gly-15 to Leu-21.	18474	H0542: 1	
HHEDN49	588136	8723	274 - 396			18475	L0369: 1 and H0542: 1.	
HHED154	588129	8724	76 - 276			18476	L0749: 1 and H0542: 1.	

HHEDB30	692086	8725	100 - 429	18477	Arg-1 to Gly-9, Gly-12 to Asn-21, Gly-32 to Pro-38.	L0750: 1 and H0542: 1.	
HHECT42	588098	8726	186 - 386	18478	Glu-13 to Glu-18, Pro-36 to Glu-59.	L0594: 2 and H0542: 1.	
HHCEM62	934414	8727	148 - 330	18479		L0779: 2, L0596: 1 and H0542: 1.	
HHCEA10	973228	8728	66 - 257	18480	Arg-35 to Gly-41.	H0542: 1	
HHBEQ68	752956	8729	3 - 200	18481	Ala-1 to Ala-6, Cys-34 to Gly-42, Cys-56 to Pro-61.	H0542: 1	
HHBEQ59	739216	8730	343 - 140	18482		H0542: 1	
HHBEBO4	615127	8731	277 - 447	18483	Gln-28 to Leu-33.	H0542: 1	
HHBEBM89	786088	8732	44 - 253	18484	Gln-44 to Leu-50, Tyr-52 to Lys-59.	H0542: 1	231680, 276700
HHBEA53	728087	8733	115 - 294	18485		H0542: 1	
HHBEJ08	858429	8734	163 - 435	18486		L0766: 2 and H0542: 1.	
HHBEBB80	775424	8735	209 - 36	18487	Pro-15 to Arg-27, Pro-38 to Lys-51.	H0542: 1	
HHBEBB22	858418	8736	85 - 300	18488	His-3 to Arg-9, Pro-15 to Glu-26, Ser-48 to Gly-61.	H0542: 1	
HHBEBA86	785413	8737	1 - 138	18489	Pro-23 to Pro-34.	L0752: 1, L0731: 1, L0605: 1 and H0542: 1.	
HHBEAL37	491205	8738	464 - 240	18490		H0542: 1	
	858421	9727	1 - 303	19479			
	858425	9728	100 - 261	19480			
HHBEA78	773538	8739	2 - 313	18491	Cys-10 to Leu-16. Leu-7 to Cys-14, Glu-22 to Glu-36, Gln-57 to Lys-63, Asp-85 to Leu-97.	L0361: 2 and H0542: 1.	7q21-q22 116860, 126650, 126650, 129900, 133170, 154276, 173360, 173360, 602136, 602136, 602136, 602447
HHBEAF06	935355	8740	169 - 381	18492	Val-3 to Leu-8.	L0518: 4, L0599: 1 and H0542: 1.	
HHBEAD08	959305	8741	536 - 736	18493	Ser-12 to Phe-18.	L0794: 4, L0651: 1 and	

HHEAC20	668948	8742	1 - 459	18494	Ser-16 to Gly-25, Asp-33 to Asn-42, Cys-72 to Ser-85, Glu-98 to Glu-106, Glu-114 to Gly-130.	H0542: 1. H0542: 1		
HHEAA02	932265	8743	26 - 631	18495	Asn-1 to Gly-19, Ala-24 to Arg-30, Phe-33 to Arg-69, Glu-104 to Ser-110, Ser-116 to Thr-123.	L0593: 2 and H0542: 1.		
HFSBE12	970629	8744	132 - 317	18496		H0057: 1		
HFSBB12	971571	8745	424 - 218	18497		H0057: 1 and L0779: 1.		
HFSBB06	960835	8746	326 - 180	18498	Pro-14 to Ala-19.	L0766: 2 and H0057: 1.		
HFSAZ51	725973	8747	453 - 316	18499		L0749: 3, L0748: 2 and H0057: 1.		
HFSAX30	693419	8748	379 - 173	18500		H0057: 1 and L0756: 1.		
HFSAW27	684668	8749	132 - 1	18501		L0794: 2, H0057: 1, L0758: 1 and L0581: 1.		
HFSAU89	785904	8750	444 - 238	18502	Thr-1 to Ala-7.	H0057: 1 and L0748: 1.		
HFSAU84	781861	8751	105 - 1	18503	Leu-16 to Cys-22.	H0057: 1 and L0749: 1.		
HFSAT96	504394	8752	239 - 60	18504	His-3 to Asp-15.	H0057: 1 and L0748: 1.		
HFSAT48	720843	8753	465 - 331	18505	Cys-4 to Phe-10, Lys-40 to His-45.	L0666: 2, L0747: 2, L0731: 2, H0057: 1, L0804: 1, L0791: 1, L0779: 1 and L0780: 1.		
HFSAS86	785851	8754	196 - 107	18506	Tyr-5 to Ser-11, Phe-13 to Asp-23.	L0777: 2, H0057: 1 and L0754: 1.	6p21	180297, 248611, 251000, 263200, 600211, 600701, 601690
HFSAR68	675246	8755	398 - 207	18507	His-1 to Ser-25, Asp-32 to Lys-44.	H0057: 1		
HFSAP25	826790 677463	9729 8756	140 - 319 344 - 249	19481 18508	Leu-4 to Ser-10, Thr-19 to Asn-24.	H0057: 1 and L0748: 1.		
HFSAK31	504424	8757	185 - 60	18509	Gln-18 to Tyr-31.	H0057: 1		

HFSAK14	504431	8758	352 - 251	18510	Pro-5 to Ser-14.	L0748: 2 and H0057: 1.	
	504432	9730	72 - 209	19482	Lys-1 to Leu-9.		
HFSAl68	753858	8759	319 - 209	18511		L0748: 2 and H0057: 1.	
HFSAH34	526472	8760	697 - 524	18512		H0057: 1, L0775: 1, L0439: 1, L0740: 1 and L0747: 1.	
HFSAG03	960973	8761	496 - 320	18513	Glu-33 to Thr-45, Arg-50 to Ser-59.	AR089: 18, AR061: 11, H0057: 1, L0520: 1 and L0389: 1.	
HFSAF33	728328	8762	314 - 96	18514		H0057: 1 and L0588: 1.	
HEOQI52	850966	8763	21 - 323	18515		H0457: 1, L0521: 1, L0766: 1 and L0581: 1.	
HEOPY91	933173	8764	132 - 314	18516	Ala-21 to Ala-34, Ser-38 to Gln-50.	H0457: 1 and L0366: 1.	
HEOAA49	942561	8765	1 - 576	18517	Leu-42 to Asp-50, Pro-94 to Ala-100, Ser-169 to Gly-174.	AR089: 6, AR061: 2, H0457: 1.	
HEONX61	741864	8766	2 - 235	18518		H0457: 1 and L0748: 1.	
HEONO64	746660	8767	158 - 427	18519		L0748: 3 and H0457: 1.	
HEONO59	741361	8768	325 - 756	18520		AR089: 5, AR061: 3, H0457: 1 and L0752: 1.	
HEONN02	840210	8769	64 - 225	18521		H0457: 1 and L0740: 1.	120435, 120435, 126600, 135300, 136435, 152790, 152790, 157170, 182601, 278300, 601071, 601771, 602134
HEONL19	575884	8770	170 - 325	18522		H0457: 1	
HEONL09	961147	8771	3 - 155	18523	Glu-30 to Lys-50.	H0457: 1	
HEONL06	935516	8772	244 - 414	18524		H0457: 1	
HEONK37	707505	8773	62 - 313	18525	Ser-1 to Asn-9.	L0754: 2 and H0457: 1.	
HEONK10	964757	8774	90 - 206	18526		H0457: 1 and L0747: 1.	
HEONJ18	575888	8775	30 - 338	18527	Arg-10 to Asp-15, Gly-33 to Gln-40, Ser-42 to Cys-49, Arg-60 to Asn-66.	H0457: 1	

HEONI92	792772	8776	330 - 602	18528	Gln-81 to Ala-87.	H0457: 1 and L0603: 1.
HEONX03	922962	8777	361 - 552	18529	Asp-1 to Ser-9.	H0457: 1
HEONX01	913683	8778	2 - 559	18530	Val-8 to Arg-18, Glu-40 to His-46, Pro-62 to Cys-69, Ser-105 to Ser-115, Pro-124 to Pro-129, Pro-139 to Ser-145, Ser-163 to Ser-169.	H0457: 1
HEONM61	506231	8779	3 - 326	18531	Pro-51 to Ser-65.	H0457: 1
HEONQ68	753075	8780	96 - 218	18532	Lys-1 to Phe-11.	H0457: 1 and L0599: 1.
HEONQ04	931032	8781	2 - 172	18533		L0756: 2 and H0457: 1.
HEOML91	667931	8782	63 - 290	18534		H0457: 1
HEOML76	575927	8783	93 - 224	18535	His-7 to Gln-12, Pro-14 to Lys-21.	H0457: 1
HEOMH63	745146	8784	80 - 256	18536		H0457: 1 and L0745: 1.
HEICC56	733383	8785	2 - 100	18537	Pro-1 to Gly-9, Arg-23 to Gln-33.	S0140: 1
HEIBB84	781994	8786	2 - 406	18538		L0745: 2 and S0140: 1.
HEIBB31	697987	8787	2 - 142	18539	Leu-29 to Ser-35.	S0140: 1 and L0777: 1.
HEIBA15	888667	8788	197 - 427	18540		AR050: 12, AR051: 10, AR054: 10
HEIAX24	677177	8789	181 - 360	18541	Leu-7 to Gly-12, Glu-23 to Cys-29.	S0140: 1
HEIAX11	967772	8790	2 - 289	18542	Thr-47 to Asn-55.	S0140: 1 and L0640: 1.
HEIAU39	861503	8791	1 - 366	18543	Lys-1 to Ser-7, Phe-31 to Arg-43.	L0534: 1, S0140: 1, L0794: 1, L0790: 1 and L0791: 1.
HEIAR07	953626	8792	186 - 410	18544	Ser-1 to Arg-14, Asp-27 to Gly-32, Gly-42 to Ala-48, Leu-65 to Ala-72.	S0140: 1 and L0592: 1.
HEIAJ39	705643	8793	61 - 402	18545		S0140: 1 and L0766: 1.
HEIAI86	785080	8794	34 - 135	18546	Ser-1 to Gly-19.	L0361: 2 and S0140: 1.
HEIAD76	574163	8795	2 - 169	18547	Leu-11 to Gln-21.	S0140: 1

HEIAC62	745672	8796	30 - 176	18548	Gln-38 to Gly-45.	S0140: 1	
HDTIM127	851806	8797	316 - 495	18549		H0486: 1 and L0589: 1.	
HDTIL05	928253	8798	1 - 285	18550	Thr-1 to Met-6, Thr-8 to Asp-15, Thr-22 to Gln-27, His-36 to Val-44, Leu-55 to Asp-75, Ser-80 to Asp-95.	L0766: 3, L0754: 2, L0758: 2, H0486: 1 and L0748: 1.	
HDTLE28	851830	8799	2 - 172	18551	Phe-27 to Lys-34.	H0486: 1 and L0631: 1.	
HDTILB90	969209	8800	293 - 733	18552	Glu-24 to Ser-35.	L0753: 2, H0486: 1, L0774: 1 and L0749: 1.	
HDTKX61	806340	8801	105 - 521	18553	Pro-32 to Ser-46, Asn-58 to Pro-76.	H0486: 1 and L0747: 1.	
HDTIP10	963456	8802	293 - 469	18554	Lys-19 to Arg-25, Phe-27 to Phe-33, Pro-38 to Lys-44, Ser-49 to Asp-56.	H0486: 1, L0648: 1 and L0755: 1.	
HDTIF29	887186	8803	3 - 299	18555	Pro-15 to Gln-30, Pro-45 to Ala-50, Val-62 to Trp-67, Gln-79 to His-99.	AR054: 25, AR050: 21, AR051: 11 H0486: 1, L0779: 1 and L0777: 1.	
HDTJF05	931977	8804	10 - 486	18556	Pro-6 to Pro-18, Ala-35 to His-42, Gly-51 to Ser-58.	L0717: 1 and H0486: 1.	
HDTIO74	933606	8805	3 - 239	18557	Ile-37 to Arg-42.	AR061: 3, AR089: 1 H0486: 1 and L0748: 1.	
HDTIO16	934151	8806	2 - 673	18558	Val-14 to Arg-20, Arg-28 to Gln-33, Arg-106 to Trp-111.	AR089: 31, AR061: 2 H0486: 1	
HDTIG62	851951	8807	3 - 263	18559	Cys-65 to Gly-70.	L0766: 3, H0486: 1, L0749: 1 and L0779: 1.	
HDTIA48	851944	8808	2 - 271	18560	Pro-1 to Asp-20, Glu-25 to Pro-32, Asp-64 to Lys-72, Glu-85 to Leu-90.	H0486: 1 and L0779: 1.	
HDTIU79	774217	8809	83 - 385	18561	Thr-17 to Arg-41.	L0757: 2 and H0486: 1.	

HDTHS05	926048	8810	462 - 896	18562	Arg-49 to Cys-57. Phe-42 to Gly-57, Ala-60 to Ser-73, Pro-91 to Gly-101, Lys-108 to Gln-116.	H0486: 1 and L0777: 1.	
HDTHP45	841796	8811	23 - 160	18563	Glu-8 to Ser-16.	H0486: 1	
HDTHI02	918728	8812	120 - 266	18564	Ser-29 to Lys-35.	L0759: 3 and H0486: 1.	
HDTHG69	754464	8813	70 - 234	18565		H0486: 1 and L0748: 1.	
HDTHI32	851964	8814	230 - 490	18566		L0790: 2, L0749: 2, H0486: 1 and L0363: 1.	
HDTHA77	771334	8815	458 - 312	18567		L0748: 2, H0486: 1, L0743: 1 and L0731: 1.	
HDTHG62	742828	8816	22 - 180	18568		L0748: 2 and H0486: 1.	
HDTHG31	697539	8817	3 - 380	18569		H0486: 1 and L0747: 1.	
HDTHI10	963966	8818	140 - 3	18570	Leu-10 to Gln-20.	L0779: 2 and H0486: 1.	
HDTHG27	682687	8819	313 - 429	18571		H0486: 1 and L0748: 1.	
HDTHX46	915075	8820	265 - 501	18572		H0486: 1 and L0748: 1.	
HDTHI42	713399	8821	259 - 474	18573		H0486: 1 and L0766: 1.	
HDTHR93	792077	8822	38 - 298	18574	Glu-39 to Lys-49.	H0486: 1 and L0439: 1.	
HDTHN38	706752	8823	205 - 408	18575	Ser-10 to Tyr-17.	H0486: 1, L0471: 1, L0745: 1 and L0756: 1.	
HDTHI27	682705	8824	92 - 382	18576		L0803: 6, L0805: 2, L0439: 2, H0486: 1, L0809: 1, L0779: 1 and L0777: 1.	181430, 217300, 600698, 600698, 600698, 600698, 600808, 602116
HDTHG15	913812	8825	40 - 333	18577	Ile-8 to Phe-15, Glu-27 to Met-32, Asp-63 to Trp-72.	L0361: 2, H0486: 1, L0766: 1 and L0439: 1.	
HDTHI62	587822	8826	111 - 332	18578		H0486: 1, L0745: 1 and L0746: 1.	
HDTHI57	872215	8827	1 - 429	18579	Gly-1 to His-9, Ala-33 to Pro-39.	L0741: 2 and H0486: 1.	
HDTHS89	799881	8828	120 - 233	18580		H0486: 1	
HDTHS44	799863	8829	138 - 266	18581	Lys-8 to Pro-13.	H0486: 1	
HDTHP20	883680	8830	1 - 384	18582	Leu-60 to His-67.	L0483: 2 and H0486: 1.	180105, 190900, 222800, 246900



HD/TFD02	919572	8831	18583	Pro-10 to Ser-20.	H0486: 1 and L0756: 1.	
HD/TFD15	851999	8832	18584	Thr-61 to Asn-69.	L0546: 4, H0486: 1 and L0779: 1.	
HD/TFD144	587742	8833	18585		L0746: 2, L0753: 2, H0486: 1, L0606: 1 and L0745: 1.	
HD/TFD389	799870	8834	18586	Gln-27 to Val-34.	H0486: 1	
HD/TFD88	615173	8835	18587	Arg-23 to Arg-29.	H0486: 1	
HD/TFD72	587710	8836	18588	Arg-40 to Pro-54.		
HD/TFD70	757088	8837	18589	Asn-21 to Arg-37.	AR089: 159, AR061: 142	113721, 247200,
HD/TFD67	754739	8838	18590	Glu-1 to His-9.	H0486: 1	600059, 601545
HD/TFD15	668754	8839	18591	Ala-11 to Thr-19.	H0486: 1	
HD/TFD74	799868	8840	18592	Leu-2 to Lys-8.	H0486: 1	
				Ala-19 to Gly-35.		
				Pro-37 to Asn-45.		
				Lys-50 to Gln-56.		
HD/TFD64	799871	8841	18593		H0486: 1	
HD/TFD38	706741	8842	18594	Ala-26 to Ser-36.	L0748: 2 and H0486: 1.	6026-q27
						100678, 147280,
						152200, 167000,
						173350, 173350,
						173350, 180020,
						600320, 600883,
						602544
HD/TFD30	692063	8843	18595		H0486: 1	
HD/TFD37	587699	8844	18596	Glu-1 to Ser-10.	H0486: 1, L0471: 1, L0745: 1 and L0777: 1.	
HD/TFD21	587700	8845	18597	Ser-24 to Ala-29.	L0747: 2, H0486: 1 and L0766: 1.	
HD/TFD55	934923	8846	18598	Ile-15 to Asn-24.	H0486: 1	
HD/TFD01	916455	8847	18599	Lys-61 to Lys-66.	H0486: 1 and L0766: 1.	
				Ser-26 to Ser-32.	H0486: 1, L0506: 1, L0508: 1, L0493: 1 and L0758: 1.	
HD/TFD23	842950	8848	18600	Arg-1 to Gly-15.	H0486: 1	

HDTBV06	953593	8849	37 - 198	18601			H0486: 1 and L0809: 1.
HDTBU73	764410	8850	538 - 720	18602	Gly-24 to Ile-30.		H0486: 1, L0748: 1 and L0747: 1.
HDTBT35	706730	8851	1 - 306	18603			L0521: 2, H0486: 1, L0740: 1, L0756: 1 and L0779: 1.
HDTBS91	789425	8852	2 - 520	18604	Glu-1 to Leu-18.		H0486: 1 and L0439: 1.
HDTBS45	591589	8853	289 - 2	18605			L0749: 2, H0486: 1, L0637: 1 and L0748: 1.
HDTBR39	705350	8854	452 - 742	18606			H0486: 1 and L0758: 1.
HDTBP84	783024	8855	78 - 275	18607	Leu-1 to Ala-6.		H0486: 1 and L0750: 1.
HDTBM53	727526	8856	25 - 150	18608			H0486: 1
HDTBM31	697918	8857	136 - 372	18609	Glu-18 to Cys-23, Asp-74 to Ser-79.		L0750: 2 and H0486: 1.
HDTBK62	742603	8858	45 - 221	18610	His-26 to Cys-41, Lys-54 to Lys-59.		H0486: 1
HDTBG80	916167	8859	173 - 478	18611	Lys-34 to Arg-41.		H0486: 1 and L0362: 1.
HDTBD67	899636	8860	252 - 1175	18612	Pro-20 to Pro-29, Phe-42 to Val-52, Leu-106 to Pro-113, Arg-134 to Gly-139, Ala-207 to Asn-213, Thr-227 to Phe-239.		AR054: 32, AR051: 10, AR089: 3, AR061: 2, AR050: 2, H0486: 1
	902517	9731	2 - 838	19483	Phe-13 to Val-23, Leu-77 to Pro-84, Arg-105 to Gly-110, Ala-178 to Asn-184, Thr-198 to Phe-210.		
HDTAU14	658429	8861	66 - 176	18613			H0486: 1 and L0745: 1.
HDTAT80	911928	8862	105 - 281	18614	Gly-44 to Thr-50.		H0486: 1
HDTAP53	728216	8863	234 - 329	18615			H0486: 1 and L0748: 1.
HDTAH15	840327	8864	180 - 476	18616			H0486: 1, L0747: 1 and L0731: 1.
HDTAE60	810259	8865	36 - 167	18617	Val-32 to Glu-37.		H0486: 1 and L0748: 1.
HDTAE44	799902	8866	260 - 397	18618			H0486: 1 and L0438: 1.
HDTAE29	780991	8867	99 - 332	18619			H0486: 1
HDTAE16	661997	8868	206 - 439	18620	Ala-12 to Ser-17.		H0486: 1

HD7AE09	799874	8869	153 - 305	18621	Ser-24 to Ser-30, Pro-73 to His-78.	H0486: 1	Xq13.1-q13.3	304040, 305100, 305450, 309605, 312760, 314250, 314580
HD7AB89	786039	8870	113 - 310	18622	Arg-3 to Asp-9,	H0486: 1 and L0748: 1.		
HD7AA31	937609	8871	1100 - 1432	18623	Pro-49 to Gly-54, Ser-65 to His-70, Lys-78 to Lys-111.	AR089: 14, AR061: 4 H0486: 1 and L0779: 1.		
	941948	9732	1100 - 1432	19484	Arg-3 to Asp-9, Pro-49 to Gly-54, Ser-65 to His-70, Lys-78 to Lys-111.			
HD7AC08	963325	8872	224 - 33	18624	Ser-6 to Ser-11, Thr-55 to Pro-60.	H0537: 1 and L0439: 1.		
HD7PR06	936658	8873	2 - 202	18625	Ser-8 to Gln-20, Gln-26 to Gln-36.	H0522: 1, L0751: 1, L0777: 1 and L0594: 1.		
HD7PP57	926953	8874	64 - 180	18626	Lys-34 to Ser-39.	H0522: 1 and L0748: 1.		
HD7QI08	958252	8875	338 - 469	18627	Arg-8 to Ile-13.	H0521: 1 and L0749: 1.		
HD7QH84	782202	8876	1 - 171	18628	Pro-15 to Gly-25, Gly-29 to Trp-41.	L0748: 3 and H0521: 1. L0766: 1 and H0521: 1.		
HD7QH094	793387	8877	1 - 126	18629				
HD7HI04	926978	8878	3 - 614	18630	Ser-8 to Ser-21, Thr-46 to Asp-55, Lys-91 to Gly-97, Gln-103 to Asp-115, Gln-125 to Ala-135, Pro-137 to Ser-143, Lys-154 to Phe-163.	L0370: 1 and H0521: 1.		
HD7QGW10	963512	8879	46 - 267	18631	Ser-1 to Trp-9, Gln-35 to Lys-40.	L0367: 1, H0521: 1 and L0439: 1.		
HD7QF78	772952	8880	352 - 480	18632	Gln-30 to Pro-35.	H0521: 1 and L0748: 1.		
HD7QIT10	852587	8881	121 - 324	18633	Ser-63 to Lys-68.	L0375: 1 and H0521: 1.		
HD7QI39	852593	8882	197 - 469	18634	Gly-74 to Thr-80.	L0766: 1 and H0521: 1.		

HDQFE93	791724	8883	870 - 1046	18635			L0439: 4, H0521: 1 and L0740: 1.
HDQEX85	875473	8884	2 - 409	18636			H0521: 1, L0748: 1 and L0749: 1.
HDQEW83	780551	8885	2 - 283	18637			L0731: 2 and H0521: 1.
HDQEW11	966126	8886	190 - 2	18638	Ser-5 to Thr-11, Cys-21 to Gly-26, Arg-51 to Gly-63.		L0519: 1 and H0521: 1.
HDQET29	852618	8887	77 - 274	18639	Gly-11 to Lys-22.		H0521: 1 and L0748: 1.
HDQEQ10	963533	8888	380 - 550	18640	Pro-41 to Thr-48.		L0766: 2, L0545: 1 and H0521: 1.
HDQEI46	957666	8889	424 - 266	18641			
HDQEF93	791753	8890	121 - 369	18642	Gly-21 to Val-28.		H0521: 1 and L0748: 1.
HDQDX89	786323	8891	2 - 709	18643	Gly-16 to Glu-27, Asn-40 to Ser-54, Ser-71 to His-79, Ile-102 to Leu-107, Glu-114 to Gln-120, Gly-127 to Gly-137, Pro-160 to Lys-177, Glu-187 to Thr-199.		L0743: 3 and H0521: 1.
HDQDT10	963482	8892	432 - 283	18644	Pro-4 to Asp-9.		L0740: 2 and H0521: 1.
HDQDG73	761957	8893	209 - 418	18645	Thr-10 to Asn-15, Pro-31 to Pro-42, Pro-47 to Thr-52.		H0521: 1, L0749: 1 and L0779: 1.
HDQDC74	764985	8894	136 - 270	18646	Tyr-21 to Ala-28.		H0521: 1 and L0750: 1.
HDPYO08	958454	8895	139 - 357	18647			H0521: 1 and L0588: 1.
HDPXZ28	686188	8896	462 - 665	18648			L0384: 1, H0521: 1 and L0779: 1.
							L0794: 2, L0770: 1, L0638: 1, L0773: 1, L0804: 1, L0805: 1, H0521: 1, L0745: 1, L0755: 1 and L0731: 1.
HDPXW88	631353	8897	357 - 187	18649	Cys-3 to His-8, Pro-11 to Glu-21.		L0766: 1 and H0521: 1.
HDPXO03	923602	8898	375 - 521	18650	Lys-1 to Asn-9.		H0521: 1 and L0748: 1.

HDPXN01	915919	8899	69 - 230	18651	Ser-48 to Ser-53.	AR089: 9, AR061: 4 L0794: 5, L0439: 2, L0747: 2, H0521: 1, L0779: 1, L0777: 1 and L0594: 1.		
HDPXL71	760140	8900	27 - 275	18652	Ala-21 to Asp-30.	H0521: 1 and L0745: 1.		
HDPXD40	974493	8901	129 - 320	18653	Glu-5 to Cys-16.	H0521: 1		
HDPXD08	958826	8902	124 - 336	18654	Val-2 to Glu-10.	L0766: 1 and H0521: 1.		
HDPXC56	974490	8903	76 - 564	18655	Gln-62 to Arg-71.	H0521: 1		
HDPXB75	786320	8904	2 - 382	18656	Gln-2 to Leu-8, Thr-30 to Pro-41.	H0521: 1		
HDPWX53	727595	8905	2 - 301	18657	Glu-61 to Gly-66, Thr-75 to Gln-82.	H0521: 1		
HDPWT92	791223	8906	331 - 567	18658	Gly-1 to Ser-6, Ser-21 to Ser-37.	H0521: 1, L0748: 1 and L0756: 1.		
HDPWR03	923608	8907	261 - 28	18659	Met-20 to Arg-30, Pro-54 to Glu-65.	H0521: 1 and L0748: 1.		
HDPWN56	733129	8908	3 - 425	18660	Arg-24 to Asp-33, Pro-45 to Glu-55, Glu-81 to Gln-102, Leu-111 to Met-120.	H0521: 1 and L0743: 1.		
HDPWK75	793234	8909	36 - 299	18661	Pro-1 to Pro-10.	H0521: 1 and L0754: 1.	20q13.1	256540, 600281, 600281
HDPWH75	956201	8910	34 - 309	18662	Pro-32 to Pro-43.	L0748: 2 and H0521: 1.		
HDPVC01	915816	8911	323 - 595	18663		H0521: 1 and L0759: 1.		
HDPWU82	921279	8912	216 - 91	18664	Gln-22 to Asp-29, Pro-37 to Thr-42.	H0521: 1 and L0439: 1.		
HDPUV65	747646	8913	248 - 538	18665	Lys-10 to Pro-19, Ile-28 to Ala-33.	H0521: 1 and L0439: 1.		
HDPUV11	966558	8914	436 - 618	18666		L0439: 3, L0748: 2 and H0521: 1.		
HDPUR51	914406	8915	233 - 3	18667	Gly-12 to Asn-17, Ala-67 to Lys-77.	L0599: 2, L0766: 1, L0775: 1, L0776: 1, H0521: 1, L0749: 1, L0779: 1, L0777: 1, L0759: 1, L0480: 1 and		

HDPUN39	957580	8916	1819 - 1067	18668	Leu-18 to Ser-24, Pro-40 to Glu-51, Ala-81 to Glu-89.	L0596: 1. AR089: 2, AR061: 1 L0755: 2, L0662: 1 and H0521: 1. L0748: 2, L0749: 2, L0664: 1 and H0521: 1.		
HDPUI44	715971	8917	53 - 250	18669				
HDPD065	747206	8918	37 - 294	18670	Thr-72 to Lys-81.	H0521: 1 and L0608: 1.		
HDPD159	739068	8919	14 - 388	18671	Arg-8 to Gly-17.	H0521: 1 and L0581: 1.		
HDPDTE43	715038	8920	192 - 419	18672	Lys-22 to Ser-31.	H0521: 1 and L0599: 1.	3q25-q29	106165, 165500, 222900, 276902
HDPD58	735750	8921	298 - 462	18673		H0521: 1 and L0748: 1.		
HDPD593	973098	8922	103 - 330	18674	Trp-2 to Ser-9.	H0521: 1		
HDPD582	779614	8923	25 - 417	18675	Gln-7 to Gln-15, Arg-61 to Cys-75, Ser-82 to His-92.	L0749: 2 and H0521: 1.		
HDPD5L71	969286	8924	157 - 294	18676	Thr-18 to Gly-23, Val-27 to Gly-32.	L0648: 1, L0803: 1, L0774: 1, L0659: 1, L0665: 1, H0521: 1 and L0758: 1.	1q22-q24	104770, 107300, 107670, 110700, 131210, 136132, 145001, 146790, 159440, 159440, 159440, 173610, 186780, 191030, 191315, 600923, 601412, 601518, 601652, 602491
HDPD5K64	746370	8925	1 - 633	18677	Arg-13 to Ser-30, Thr-40 to Asp-52.	H0521: 1 and L0749: 1.		
HDPD5K53	727586	8926	1 - 474	18678	Leu-25 to Gln-32, Ile-48 to Glu-53, Glu-69 to Cys-78.	L0601: 2 and H0521: 1.		
HDPD5I13	656729	8927	257 - 394	18679		H0521: 1 and L0748: 1.		
HDPD5B10	961309	8928	1 - 444	18680	Met-14 to Pro-24, Lys-31 to Glu-36, His-70 to Gly-76.	AR089: 1, AR061: 0 L0665: 1 and H0521: 1.		
HDPD5A86	785293	8929	432 - 219	18681		H0521: 1 and L0439: 1.		
HDPD5W01	915993	8930	91 - 294	18682	Gly-1 to Ser-6,	H0521: 1 and L0731: 1.		

HDPRES89	887682	8931	3 - 341	18683	Gln-23 to Ser-38. Asn-54 to Lys-63, Thr-69 to Phe-74, Trp-98 to Ser-108.	AR050: 58, AR054: 55, AR051: 47 H0521: 1	
HDPRR24	914667	8932	111 - 410	18684	Asn-65 to Arg-71.	H0521: 1 and L0745: 1.	
HDPK07	948672	8933	12 - 158	18685	Arg-1 to Thr-11, Ser-19 to Leu-25.	L0766: 1, H0521: 1 and L0779: 1.	
HDPK04	909040	8934	3 - 419	18686	Lys-21 to His-27, Phe-44 to Arg-55, Lys-72 to Lys-80, Gln-88 to Thr-94.	AR089: 0, AR061: 0 H0521: 1 and L0758: 1.	
HDPRE41	712124	8935	378 - 232	18687	His-20 to Thr-25.	H0521: 1 and L0754: 1.	
HDPRA51	725103	8936	2 - 175	18688	Arg-27 to Ser-32.	H0521: 1	
HDPQV82	779421	8937	13 - 327	18689	Gly-5 to Gly-11, Lys-38 to Lys-43.	H0522: 1 and L0748: 1.	
HDPQR07	952337	8938	500 - 604	18690	Gln-42 to Asp-47, Gly-54 to Gly-61, Pro-67 to Asn-73, Lys-145 to Asn-151.	H0522: 1 and L0779: 1.	
HDPQ168	955006	8939	14 - 508	18691	Arg-12 to Arg-20, Phe-34 to Lys-45, Pro-65 to Asp-70.	L0752: 2, L0659: 1, H0522: 1 and L0779: 1.	
HDPQH06	934616	8940	66 - 275	18692		L0794: 1 and H0522: 1.	
HDPQF03	923120	8941	5 - 748	18693		AR054: 9, AR050: 7, AR051: 2 L0769: 1, H0522: 1, L0744: 1 and L0754: 1.	
HDPQC63	744461	8942	18 - 302	18694	Asn-16 to Arg-21, Arg-35 to Ile-41.	H0522: 1 and L0748: 1.	
HDPQA64	872237	8943	3 - 266	18695	Pro-6 to Arg-19, Pro-25 to Cys-30, Pro-33 to Arg-40.	H0522: 1 and L0596: 1.	
HDPPI29	690497	8944	138 - 1	18696	Ser-30 to Gly-45.	H0522: 1 and L0759: 1.	
HDPPIB17	662917	8945	1 - 387	18697	Pro-17 to Gly-34, Asp-59 to Val-72, His-77 to Asp-87.	H0522: 1 and L0740: 1.	

					Ser-107 to Thr-121.		
HDPX03	923856	8946	320 - 132	18698	Asn-9 to Asn-15.	H0522: 1 and L0749: 1.	
HDP0178	773487	8947	223 - 456	18699	Ser-1 to Tyr-7, Tyr-19 to Val-25, Leu-30 to Thr-35, Ile-47 to Asn-56, Ile-68 to His-75.	L0753: 2, H0522: 1, L0740: 1 and L0750: 1.	
HDP0P03	923843	8948	185 - 439	18700	Thr-10 to Tyr-15, Gly-66 to Ile-81.	H0522: 1 and L0756: 1.	
HDP0C02	919597	8949	344 - 631	18701	Arg-16 to Gly-22.	L0439: 2, H0522: 1, L0779: 1 and L0731: 1.	
HDPN173	764407	8950	1 - 228	18702	Val-1 to Ser-12, Ser-18 to Arg-23.	H0522: 1 and L0603: 1.	
HDPND09	607575	8951	323 - 165	18703	Arg-20 to Asp-25, Gly-37 to Val-47.	H0522: 1	
	874076	9733	308 - 18	19485	Pro-8 to Arg-13, Thr-39 to Gln-48.		
	897723	9734	425 - 291	19486	Gln-22 to Cys-28, Leu-40 to Lys-45.		
HDPNC22	674539	8952	407 - 715	18704	Gln-1 to Gly-6, Asp-11 to Gln-18, Pro-20 to Tyr-25, Pro-27 to Lys-38.	L0748: 6, L0749: 2, H0522: 1 and L0752: 1.	
HDPNV35	706647	8953	191 - 349	18705	Ala-1 to Pro-11, Lys-18 to Leu-31, Met-59 to Arg-64.	H0522: 1 and L0752: 1.	
HDPNR81	493958	8954	422 - 189	18706	Thr-2 to Gln-9, Ser-11 to Lys-16, Ile-65 to Arg-77.	H0522: 1	
	584265	9735	1 - 282	19487			
HDPMH51	725029	8955	3 - 224	18707	Asn-14 to Tyr-22, Lys-44 to Ser-50.	L0746: 3, H0522: 1 and L0748: 1.	
HDPMG46	934144	8956	274 - 2	18708		H0522: 1 and L0780: 1.	
HDPV29	849526	8957	224 - 439	18709	Glu-35 to Tyr-46.	L0766: 2 and H0521: 1.	
HDPV84	782061	8958	163 - 318	18710	Lys-9 to Gln-14, Thr-40 to Cys-49.	H0521: 1 and L0748: 1.	



HDPLT62	973945	8959	405 - 809	18711		AR089: 1, AR061: 0 H0521: 1	
HDPKI78	773469	8960	19 - 126	18712		H0521: 1 and L0749: 1.	
HDPKA03	923841	8961	267 - 407	18713		L0740: 4, L0777: 2, L0803: 1 and H0521: 1.	
HDPIX07	952966	8962	350 - 574	18714		L0769: 1, L0803: 1, H0521: 1 and L0758: 1.	
HDPIJP44	716466	8963	91 - 360	18715		L0803: 7, L0794: 5, L0804: 5, L0775: 3, L0789: 2, L0805: 1, L0776: 1, L0809: 1, H0521: 1, L0747: 1, L0779: 1 and L0758: 1.	
HDPIK23	488326	8964	2 - 355	18716		H0521: 1 and L0757: 1.	
HDPIB19	887886	8965	3 - 293	18717		AR050: 112, AR051: 76, AR054: 75 H0521: 1	
HDPIA07	953001	8966	46 - 243	18718		H0521: 1 and L0745: 1.	
HDPIW95	933240	8967	181 - 774	18719		L0779: 2, H0521: 1, L0745: 1 and L0758: 1.	
HDPIV34	703959	8968	328 - 489	18720		H0521: 1 and L0754: 1.	
HDPIQ24	771939	8969	141 - 485	18721		H0521: 1 and L0595: 1.	
HDPIPO6	935198	8970	444 - 569	18722		H0521: 1 and L0748: 1.	
HDPIIL73	764344	8971	34 - 213	18723		H0521: 1	
HDPILO1	916221	8972	206 - 343	18724		H0521: 1	
HDPIF78	881960	8973	130 - 360	18725		H0521: 1	
HDPIF66	750575	8974	51 - 443	18726		H0521: 1	108725, 120700, 133171, 136836, 145981, 147141, 164953, 188070, 600957, 601238,

HDPHF54	729441	8975	239 - 469	18727	Pro-7 to Thr-12, Thr-17 to Thr-26.	H0521: 1 and L0439: 1.	601846, 602216, 602477
HDPID88	415993	8976	2 - 241	18728	Ser-1 to Leu-17, Gln-22 to Gly-29, Cys-32 to Trp-39, Ser-45 to Ser-64.	H0521: 1	
HDPID53	728058	8977	222 - 401	18729	Ala-19 to Gln-26.	H0521: 1	
HDPID21	827350	8978	1 - 192	18730		H0521: 1	
HDPHF37	706622	8979	54 - 209	18731		H0521: 1	
HDPHA89	786078	8980	111 - 437	18732	Glu-12 to Gln-17, Lys-25 to His-35.	L0745: 2, H0521: 1, L0741: 1 and L0746: 1.	
HDPHA40	711126	8981	1 - 162	18733	Pro-4 to Arg-12, Leu-30 to Thr-36.	H0521: 1 and L0749: 1.	
HDPHA37	812336	8982	2 - 508	18734	Gln-14 to Gly-20, Pro-35 to Gly-42, Leu-55 to Pro-62, Gln-92 to Asp-104, Ser-130 to Lys-136, Lys-145 to Ala-153, His-155 to Thr-161.	H0521: 1	
HDPHA34	704036	8983	264 - 512	18735		H0521: 1 and L0748: 1.	
HDPGX15	660089	8984	43 - 315	18736		H0521: 1	
HDPGX10	964519	8985	419 - 550	18737		L0766: 1 and H0521: 1.	
HDPGX03	924010	8986	242 - 388	18738		H0521: 1	
HDPGT96	973363	8987	1 - 237	18739	His-20 to Asp-26.	H0521: 1	
HDPGS93	792256	8988	239 - 466	18740	Phe-21 to Gly-37, Leu-63 to Asn-76.	H0521: 1	
HDPGS45	921381	8989	24 - 236	18741		L0748: 3 and H0521: 1.	
HDPGS43	715232	8990	39 - 212	18742	Arg-15 to Pro-21, Gln-44 to Ala-57.	L0794: 1, L0766: 1, H0521: 1, L0750: 1, L0771: 1 and L0759: 1.	
HDPGS16	909833	8991	188 - 460	18743	Asp-40 to Leu-46, Phe-50 to Arg-61, Pro-76 to Asp-83.	AR061: 0, AR089: 0 H0521: 1 and L0758: 1.	

HDPGS01	916352	8992	58 - 204	18744	Pro-6 to Gly-13.	H0521: 1	
HDPGR44	468389	8993	1 - 225	18745	Gly-1 to Ile-10.	H0521: 1	
HDPGN15	394693	8994	195 - 389	18746	Pro-22 to Gly-27.	H0521: 1	
HDPGN13	416046	8995	1 - 147	18747	Pro-20 to His-25, Arg-55 to Cys-61.	H0521: 1	
HDPGN11	966923	8996	300 - 166	18748	Gly-27 to Asn-32, Gly-42 to Pro-49.	H0521: 1	
HDPGJ49	722903	8997	119 - 310	18749		L0766: 1 and H0521: 1.	
HDPGJ75	766618	8998	156 - 302	18750	Arg-18 to Gln-24.	H0521: 1	
HDPGJ74	765524	8999	87 - 209	18751	Pro-18 to Lys-35.	H0521: 1	
HDPGH73	764397	9000	2 - 118	18752	Glu-6 to Gly-11, Lys-18 to Ile-32.	H0521: 1	
HDPGG01	916389	9001	282 - 115	18753		H0521: 1 and L0604: 1.	
HDPGD28	879489	9002	223 - 441	18754	Phe-19 to Asp-28.	H0521: 1, L0748: 1 and L0749: 1.	
HDPFZ70	709684	9003	482 - 775	18755	Leu-40 to Gly-93.	AR054: 199, AR051: 196, AR050: 193, AR089: 22, AR061: 4 H0521: 1	
HDPFW02	872273	9736	289 - 522	19488			
HDPFS71	919306	9004	211 - 2	18756	Ala-60 to Gly-70.	H0521: 1	
HDPFS59	486744	9005	481 - 329	18757		H0521: 1	
HDPFP96	486737	9006	65 - 196	18758	Lys-38 to His-43.	H0521: 1	
	796360	9007	116 - 226	18759	Gly-1 to Lys-6, Phe-9 to Thr-17, Lys-27 to Thr-33.	H0521: 1 and L0581: 1.	
HDPFP71	760327	9008	374 - 655	18760	Thr-10 to Cys-17, His-39 to Gly-46, Arg-58 to Ser-71.	L0747: 2 and H0521: 1.	
HDPFP14	486765	9009	127 - 321	18761		H0521: 1	
	495698	9737	446 - 279	19489	Ser-18 to Thr-25, Pro-35 to Ser-40.		
HDPFN23	486738	9010	315 - 455	18762		H0521: 1	
	495721	9738	346 - 149	19490	Ala-1 to Gln-16, Pro-37 to Ala-45.		

HDPM28	486766	9011	1 - 243	18763	Pro-47 to Lys-54, Ser-5 to Ser-14, Ser-34 to Gly-45, Gly-51 to Cys-56.	H0521: 1	
HDPL52	495724 486739 495697	9739 9012 9740	477 - 223 43 - 198 195 - 1	19491 18764 19492	His-17 to Cys-22, Lys-1 to Lys-7, Pro-45 to Arg-54, Asp-60 to Pro-65.	H0521: 1	
HDPL58	783957	9013	229 - 74	18765	Ile-87 to Ile-94.	H0521: 1 and L0750: 1.	
HDPLD10	964521	9014	270 - 632	18766	Tyr-12 to Gly-17, Tyr-75 to Asp-81.	H0521: 1, L0777: 1 and L0759: 1.	
HDPLB03	936331	9015	326 - 607	18767	Thr-30 to Asn-35.	L0776: 1, H0521: 1 and L0748: 1.	
HDPLH08	959303	9016	155 - 352	18768		H0521: 1 and L0588: 1.	
HDPLD12	970592	9017	379 - 164	18769		L0770: 11, L0775: 1, L0787: 1, L0666: 1 and H0521: 1.	
HDPLC90	590161	9018	101 - 241	18770	Val-3 to Tyr-17.	H0521: 1	
HDPCY47	950991	9741	564 - 785	19493		H0521: 1 and L0750: 1.	
HDPCP89	775412	9019	2 - 358	18771	Ala-1 to Arg-6, Thr-30 to Ser-43.	H0521: 1	
HDPCP64	786075	9020	2 - 175	18772		H0521: 1	
HDPCP64	746527	9021	138 - 332	18773		H0521: 1	
HDPCP48	721620	9022	317 - 418	18774		H0521: 1	
HDPCP46	719014	9023	210 - 356	18775		H0521: 1	
HDPCP43	715227	9024	198 - 446	18776	Pro-1 to Asn-6, Asp-19 to Lys-35.	H0521: 1	
HDPCP16	416032	9025	263 - 421	18777		H0521: 1	
HDPCO12	852847	9026	80 - 310	18778		H0521: 1	
HDPCN88	416035	9027	219 - 365	18779	Lys-28 to Thr-33.	H0521: 1	
HDPCN73	764400	9028	1 - 138	18780		H0521: 1	
HDPCN33	416028	9029	169 - 351	18781		H0521: 1	
HDPCM66	852849	9030	50 - 472	18782	Thr-6 to Gly-11, Pro-29 to Met-40.	H0521: 1	114835, 132700, 172490, 600968

HDPCH62	454740	9031	137 - 382	18783	His-1 to Asn-12, Pro-14 to Pro-27, Asn-33 to Ser-39, Pro-41 to Asn-46, Pro-74 to Pro-82.	AR061: 159, AR089: 121 H0521: 1	1p34.1-p32	120550, 120570, 120575, 120950, 120960, 121800, 130500, 133200, 138140, 171760, 171760, 178300, 187040, 255800, 600101, 600650, 600650, 600722, 600722
HDPCH45	974424	9032	221 - 382	18784		H0521: 1		
HDPCH85	973314	9033	7 - 222	18785		H0521: 1		
HDPCH33	495711	9034	509 - 330	18786	Gly-3 to Asn-15.	H0521: 1		
	852850	9742	8 - 190	19494	Gln-29 to Tyr-45.			
	852872	9743	122 - 304	19495				
HDPCH67	878776	9035	3 - 299	18787	Glu-11 to Ala-20, Gly-74 to Pro-80.	H0521: 1 and L0747: 1.		
HDPBQ75	466645	9036	1 - 429	18788	Glu-22 to Asp-29, Asp-53 to Ser-63, Met-95 to Arg-104, Thr-115 to Asn-126.	H0521: 1 and L0600: 1.		
HDPBP64	746537	9037	3 - 218	18789	Ile-2 to Gln-7, Val-37 to Lys-44, Lys-58 to Ser-64.	H0521: 1 and L0439: 1.		
HDPB131	852885	9038	400 - 546	18790		H0521: 1 and L0751: 1.		
HDPBF15	852880	9039	189 - 28	18791	Thr-18 to Ile-37.	H0521: 1 and L0751: 1.		
HDPB85	783544	9040	3 - 224	18792	Cys-27 to Asn-41.	L0748: 4 and H0521: 1.		
HDPAX21	670893	9041	278 - 418	18793		H0521: 1 and L0599: 1.		
HDPV46	719027	9042	103 - 291	18794	Glu-22 to Thr-27, Pro-38 to Thr-43, Lys-52 to Gln-57.	H0521: 1 and L0596: 1.		
HDPAP04	615193	9043	128 - 370	18795		H0521: 1 and L0748: 1.		
HDPAP068	972332	9044	1054 - 752	18796	Lys-28 to Ser-38, Arg-51 to Gly-64.	AR061: 30, AR089: 13 H0521: 1		
HDPAP064	746550	9045	305 - 457	18797		H0521: 1 and L0439: 1.	9q13-q21	190100, 200150, 229300, 229300,

HDPAN94	901123	9046	242 - 463	18798			AR050: 3, AR051: 2, AR054: 0 H0521: 1	600429, 600884, 600974, 600998, 602014
HDPKAK09	494170	9047	143 - 48	18799		Arg-3 to Gly-16.	H0521: 1	
HDPAL64	852903	9744	321 - 464	19496		Cys-38 to Pro-44, Glu-50 to Ser-56.	H0521: 1	
HDPAL64	881654	9048	46 - 324	18800				
HDPALH17	663779	9049	122 - 331	18801		His-57 to Glu-63.	L0748: 2, L0747: 2, H0521: 8q 1 and L0749: 1.	
HDPALF40	856391	9050	442 - 567	18802			L0599: 2 and H0521: 1.	
HDPAC90	787296	9051	1 - 216	18803			L0605: 2, H0521: 1, L0748: 1, L0745: 1 and L0747: 1.	
HDPAC78	773570	9052	109 - 213	18804			H0521: 1 and L0748: 1.	
HDPAB34	581900	9053	358 - 2	18805		Cys-72 to Thr-79, Thr-105 to Gly-119.	H0521: 1	
	959495	9745	2 - 169	19497				
	959496	9746	1 - 39	19498				
HDPAA80	775417	9054	89 - 310	18806			H0521: 1 and L0748: 1.	
HDPAA38	546575	9055	184 - 2	18807		Lys-51 to Gly-61.	H0521: 1	
HDLBE11	966230	9056	109 - 2	18808		Thr-1 to Gly-6, Gln-13 to Phe-20.	H0485: 1 and L0751: 1.	
HDLAX74	765091	9057	277 - 516	18809		Gly-1 to Gln-8, Leu-17 to Cys-26, Pro-38 to Gln-47, Ser-59 to Gly-66.	L0753: 3 and H0485: 1.	
HDLAX52	726241	9058	615 - 794	18810				
HDLAW58	735559	9059	111 - 395	18811		Asn-78 to Tyr-83.	H0485: 1 and L0731: 1. 10q	
HDLAV11	852919	9060	122 - 256	18812			H0485: 1 and L0759: 1.	
HDLAG57	565105	9061	211 - 441	18813		Arg-9 to Gly-20.	H0485: 1	
HDLAC67	751699	9062	1 - 141	18814		Asn-14 to Ile-19.	H0485: 1	
HDLAC51	799888	9063	261 - 428	18815		Leu-20 to Asn-25, Leu-41 to Asn-51.	H0485: 1	
HDLAC30	799891	9064	3 - 209	18816		Asp-1 to Arg-18.	H0485: 1	

HDLA458	736081	9065	297 - 491	18817	Ser-16 to Ser-21.	H0485: 1
HDCBF12	969401	9066	1 - 189	18818	Phe-6 to Thr-11.	H0637: 1 and L0658: 1.
HDCBD07	951048	9067	1 - 180	18819		H0637: 1 and L0666: 1.
HDCAN06	933818	9068	3 - 176	18820		H0637: 1 and L0601: 1.
HDCAC61	852968	9069	80 - 298	18821		H0637: 1 and L0518: 1.
HDBAK09	625387	9070	316 - 546	18822	Asn-6 to Arg-11.	H0578: 1 and L0755: 1.
HDBAA11	966723	9071	283 - 459	18823	Leu-3 to Gln-9.	L0717: 1 and H0578: 1.
HCWVH01	915420	9072	78 - 194	18824		H0589: 1 and L0753: 1.
HCWVA80	974488	9073	1 - 135	18825	Glu-1 to Gln-22.	H0589: 1
HCWUS57	974462	9074	104 - 433	18826	Leu-28 to Ser-33, Thr-57 to Lys-63, Lys-75 to Trp-84, Thr-94 to Gly-103.	H0589: 1
HCWUS50	974467	9075	328 - 516	18827	His-26 to Gln-39, Leu-53 to Tyr-61.	H0589: 1
HCWUQ81	853002	9076	285 - 518	18828	Val-10 to Gly-15.	H0589: 1 and L0748: 1.
HCWUQ10	964080	9077	1 - 207	18829	Ser-31 to Gly-45, Glu-60 to Asn-65.	H0589: 1, L0775: 1 and L0758: 1.
HCWUP62	743064	9078	218 - 430	18830		H0589: 1, L0743: 1 and L0744: 1.
HCWUM01	974466	9079	1 - 243	18831	His-71 to Pro-77.	H0589: 1
HCWUL35	706530	9080	69 - 191	18832	Ala-7 to His-12.	L0777: 2 and H0589: 1.
HCWUI49	722674	9081	152 - 367	18833	Glu-16 to Arg-21, Pro-35 to Ala-41.	H0589: 1 and L0596: 1.
HCWTP17	662486	9082	16 - 225	18834	Ser-23 to Lys-29, Ser-55 to Asp-68.	H0589: 1 and L0740: 1.
HCWTL02	919252	9083	99 - 308	18835	Leu-2 to Ser-9.	H0589: 1 and L0759: 1.
HCWSC38	706523	9084	194 - 547	18836	Ala-6 to Leu-11, Leu-70 to Ser-83.	H0305: 1 and L0758: 1.
HCWLA43	927571	9085	130 - 324	18837		H0305: 1 and L0748: 1.
HCWK171	888167	9086	2 - 322	18838	Thr-7 to Ser-35.	AR050: 1, AR051: 1, AR054: 1 H0305: 1
HCWKS70	757172	9087	44 - 142	18839	Thr-14 to Gln-25.	H0305: 1
HCWKS35	706518	9088	147 - 332	18840	Phe-1 to Leu-6.	H0305: 1

HCWKR86	784705	9089	263 - 376	18841	Gln-32 to Gly-38.	H0305: 1
HCWKR85	783555	9090	138 - 284	18842	Arg-6 to Leu-13, Cys-20 to His-27, Lys-41 to Pro-47.	H0305: 1
HCWKR82	742602	9091	121 - 255	18843	Leu-21 to Gly-26, Ser-35 to Cys-42.	H0305: 1
HCWKR81	725027	9092	79 - 225	18844	Ser-8 to Pro-19.	H0305: 1
HCWKR14	658421	9093	128 - 334	18845	Gln-39 to Trp-47.	H0305: 1, L0748: 1 and L0749: 1.
HCWKR09	625546	9094	57 - 314	18846		H0305: 1 and L0741: 1.
HCWKR72	760628	9095	62 - 169	18847	Arg-26 to Ile-36.	H0305: 1 and L0757: 1.
HCWKR85	783545	9096	38 - 202	18848	Lys-1 to Ser-16, Arg-24 to Ser-32, Glu-49 to Asp-58, Ala-67 to Thr-74.	L0748: 2, L0749: 2 and H0305: 1.
HCWKR61	741803	9097	2 - 241	18849		H0305: 1 and L0731: 1.
HCWHRN53	728248	9098	148 - 345	18850		AR051: 31, AR050: 26, AK054: 20
HCWHR76	838528	9099	448 - 693	18851	Lys-1 to Trp-10, Cys-34 to His-41, Thr-48 to Glu-62.	H0305: 1
HCWGY56	732688	9100	99 - 230	18852		H0305: 1 and L0748: 1.
HCWGU65	747198	9101	535 - 116	18853		H0305: 1
HCWGR02	920121	9102	1 - 291	18854	Ser-11 to Cys-20, Leu-27 to Val-36.	H0305: 1
HCWGE86	974476	9103	348 - 530	18855	Ile-1 to Asp-7.	H0305: 1, L0803: 1 and L0599: 1.
HCWGE85	783528	9104	238 - 360	18856	Pro-34 to Gln-39.	H0305: 1 and L0749: 1.
HCWGA64	746153	9105	30 - 152	18857		H0305: 1
HCWFO7	953582	9106	32 - 430	18858	Asn-14 to Gln-22, Arg-30 to Ala-37, Ser-45 to Gly-74.	H0305: 1, L0779: 1 and L0758: 1.
HCWFL40	710419	9107	49 - 291	18859		H0305: 1 and L0777: 1.
HCWFM44	716726	9108	108 - 584	18860	Arg-2 to His-13.	L0754: 2, H0305: 1 and L0748: 1.
						107741, 113900, 122720, 122720, 126340, 126391.



HCWFK37	800389	9109	128 - 304	18861	Pro-19 to Gln-25, Lys-45 to Leu-52.	AR050: 18, AR054: 12, AR051: 8 H0305: 1	160900, 164731, 173850, 207750, 248600, 258501
HCWFI71	489879	9110	2 - 328	18862	Thr-78 to Ala-86, Pro-98 to Gln-109.	H0305: 1	
HCWFE35	722467	9111	2 - 370	18863	Arg-1 to Arg-6.	L0740: 2, H0305: 1, L0157: 1 and L0755: 1.	
HCWFA63	578898	9112	1 - 237	18864	Gly-6 to Gln-14, Cys-24 to Phe-29.	H0305: 1	
HCWFA51	584725	9113	1 - 234	18865	Gly-6 to Gln-14, Cys-24 to Phe-29.	H0305: 1	
HCWFA35	908820	9114	50 - 364	18866	Lys-19 to Thr-26.	AR089: 13, AR061: 6 H0305: 1	
HCWFA27	578899	9115	86 - 349	18867	Gln-2 to Ser-7, Leu-20 to Lys-26.	H0305: 1	
HCWFA03	921938	9116	244 - 381	18868		H0305: 1	
HCWEW92	573389	9117	1 - 129	18869	Leu-20 to Thr-34.	H0305: 1	
HCWEW68	849928	9118	125 - 268	18870	Ala-29 to Glu-39.	H0305: 1	
HCWES28	685583	9119	2 - 127	18871		H0305: 1	
HCWER13	586984	9120	29 - 187	18872		H0305: 1	
HCWEQ61	741989	9121	2 - 301	18873	Glu-26 to Gln-31, Lys-41 to Glu-50.	H0305: 1, L0748: 1 and L0749: 1.	
HCWEH95	795046	9122	151 - 276	18874	Arg-1 to Trp-6, Cys-13 to Arg-19.	H0305: 1 and L0748: 1.	
HCWDO74	576471	9123	3 - 206	18875		H0305: 1	
HCWDO26	576470	9124	40 - 147	18876		H0305: 1	
HCWDD81	514607	9125	278 - 144	18877		H0305: 1	
	588502	9748	11 - 343	19500			
	623460	9749	99 - 326	19501	Pro-35 to Thr-40, Trp-51 to Ser-58.		
HCWCR40	711507	9126	176 - 316	18878	Phe-3 to Lys-8, Ser-15 to Val-22.	L0766: 2, H0305: 1 and L0745: 1.	
HCWCN11	849959	9127	717 - 896	18879		L0766: 2, L0748: 2 and	

HCWCM08	849958	9128	122 - 340	18880			H0305: 1.	
HCWCL46	719244	9129	240 - 410	18881		Gly-11 to Lys-16.	H0305: 1, L0766: 1 and L0777: 1.	
HCWCJ16	411336	9130	175 - 465	18882		Thr-72 to Tyr-79.	H0305: 1, L0774: 1 and L0465: 1.	
	514257	9750	549 - 355	19502		Ser-1 to Gly-10.	H0305: 1	
HCWCJ85	840121	9131	210 - 389	18883		Ser-1 to Arg-9.	H0305: 1 and L0766: 1.	
HCWCJ85	753191	9132	102 - 257	18884		Leu-13 to Gly-25, Pro-31 to Ile-36.	H0305: 1	
HCWCJ11	967666	9133	172 - 291	18885		Tyr-3 to Ser-10.	H0305: 1, L0109: 1, L0749: 1, L0779: 1 and L0599: 1.	
HCWBM07	954100	9134	108 - 467	18886		Tyr-17 to Ala-33, Pro-58 to Asp-63, Arg-89 to Asp-94, Ala-97 to Pro-104.	L0748: 11 and H0305: 1.	
	728385	9135	236 - 60	18887		Arg-42 to Asp-59.	H0305: 1	
HCWAN45	889047	9751	11 - 223	19503				
HCWAJ53	586997	9136	67 - 300	18888		Val-4 to Lys-13.	H0305: 1	
HCWAB85	783392	9137	180 - 311	18889		Pro-1 to Val-7.	H0305: 1	
HCWAB72	766288	9138	56 - 211	18890			H0305: 1	
HCWAB49	529659	9139	2 - 64	18891		Thr-3 to His-12.	H0305: 1	
HCWAB37	575491	9140	56 - 190	18892		Ala-18 to Trp-31, Thr-33 to Ser-38.	H0305: 1	
HCWAB36	529660	9141	98 - 244	18893		Tyr-1 to Asp-17, Trp-37 to Cys-44.	H0305: 1	
HCWAB35	416968	9142	1 - 201	18894		Ser-12 to Ser-17.	H0305: 1	
HCWAB25	575270	9143	21 - 137	18895		Arg-6 to Leu-13.	H0305: 1	
HCWAB23	529664	9144	2 - 241	18896		His-45 to Gln-53, Pro-56 to Thr-74.	H0305: 1 and L0789: 1.	
HCVAC86	785784	9145	27 - 227	18897		Leu-7 to Leu-13.	H0300: 1	
HCVAC80	529688	9146	143 - 316	18898			H0300: 1	
HCVAC73	529687	9147	2 - 226	18899		Pro-53 to Trp-62.	H0300: 1	
HCVAC72	529693	9148	39 - 260	18900			H0300: 1	

HCVAC70	507284	9149	1115 - 354	18901	Gly-9 to Ser-17, Thr-51 to Thr-57.	H0300: 1 and L0604: 1.	
HCVAC58	575510	9150	2 - 202	18902	Ser-16 to Ala-22, Lys-61 to Glu-67.	H0300: 1	
HCVAC47	861969	9151	168 - 326	18903	Ala-1 to Trp-8,	H0300: 1	
HCVAC45	529691	9152	2 - 289	18904	Glu-22 to Leu-28, Leu-32 to Pro-55, Arg-64 to Asp-69, Glu-73 to Leu-79.	H0300: 1	138190, 254210, 271900, 600179, 600977, 601202, 601777
HCVAC38	529692	9153	209 - 319	18905		H0300: 1	
HCVAC33	529694	9154	191 - 331	18906		H0300: 1	
HCVAC26	529698	9155	69 - 290	18907	Pro-15 to Arg-20.	H0300: 1	
HCVAC21	529695	9156	55 - 222	18908	Met-1 to Ser-6.	H0300: 1	
HCVAC19	879694	9157	3 - 197	18909		H0300: 1	
HCU006	934889	9158	229 - 372	18910	Ser-24 to Asp-37.	H0402: 1	
HCUIM28	849998	9159	2 - 409	18911	Pro-16 to Thr-29, Pro-45 to Ala-53, Pro-72 to Trp-77, Pro-101 to Ser-107.	H0402: 1 and L0759: 1.	
HCUK74	765645	9160	50 - 292	18912		L0750: 2 and H0402: 1.	
HCUHY13	657297	9161	120 - 386	18913		H0402: 1 and L0361: 1.	
HCUHY10	964727	9162	60 - 224	18914		H0402: 1 and L0748: 1.	
HCUHU61	850008	9163	183 - 395	18915	Glu-8 to Arg-15.	H0402: 1 and L0717: 1.	
HCUHU54	730739	9164	200 - 367	18916		H0402: 1 and L0754: 1.	
HCUHT92	792756	9165	3 - 206	18917	Asn-20 to Cys-25, Asn-30 to Ala-38.	H0402: 1 and L0748: 1.	
HCUHT74	765641	9166	113 - 256	18918	Asp-1 to Glu-8.	H0402: 1	
HCUHT37	575794	9167	87 - 200	18919	Asn-8 to Thr-31, Leu-33 to Trp-38.	H0402: 1	
HCUHT26	681874	9168	2 - 118	18920		H0402: 1	
HCUHT13	657295	9169	17 - 217	18921	Asn-11 to Lys-16.	H0402: 1	
HCUHT03	924494	9170	130 - 282	18922	Glu-37 to Gly-44.	L0748: 2 and H0402: 1.	
HCUHS21	670988	9171	247 - 423	18923		H0402: 1 and L0748: 1.	
HCUHO27	690027	9172	28 - 177	18924		L0731: 3, L0768: 2, H0402:	

									L0659: 1 and L0759: 1.
HCUH013	879921	9173	515 - 276	18925					H0402: 1
HCUHK11	967142	9174	180 - 410	18926					H0402: 1, L0717: 1 and L0612: 1.
HCUHH95	941943	9175	1411 - 1061	18927					H0402: 1
HCUHH04	927500	9176	3 - 566	18928					H0402: 1
HCUHG67	751673	9177	563 - 760	18929					L0777: 2 and H0402: 1.
HCUGL36	784694	9178	133 - 312	18930					H0402: 1 and L0468: 1.
HCUGS67	751669	9179	328 - 450	18931					H0402: 1 and L0596: 1.
HCUG007	953412	9180	122 - 262	18932					H0402: 1 and L0518: 1.
HCUGN19	716989	9181	35 - 382	18933					AR089: 7, AR061: 2 L0744: 3, L0766: 2, H0402: 1 and L0754: 1.
HCUGM93	792329	9182	5 - 262	18934					H0402: 1 and L0748: 1.
HCUGM64	745853	9183	193 - 330	18935					H0402: 1 and L0747: 1.
HCUGL20	668913	9184	112 - 303	18936					H0402: 1 and L0748: 1.
HCUGL01	916550	9185	1 - 162	18937					L0785: 1 and H0402: 1.
HCUGK86	785517	9186	164 - 301	18938					H0402: 1
HCUGK85	783521	9187	3 - 329	18939					H0402: 1
HCUGK78	773601	9188	69 - 227	18940					H0402: 1
HCUGK64	746604	9189	3 - 137	18941					H0402: 1
HCUGK54	730709	9190	3 - 116	18942					H0402: 1
HCUGK51	725013	9191	2 - 178	18943					H0402: 1
HCUGK38	706479	9192	19 - 174	18944					H0402: 1
HCUGK25	678130	9193	1 - 165	18945					H0402: 1
HCUGK18	666454	9194	110 - 259	18946					H0402: 1
HCUGK17	424102	9195	34 - 204	18947					H0402: 1
HCUGK14	657539	9196	2 - 265	18948					H0402: 1 and L0662: 1.
HCUGK05	932078	9197	3 - 125	18949					H0402: 1
HCUJ64	746608	9198	2 - 283	18950					H0402: 1
HCUGH79	775206	9199	178 - 279	18951					H0402: 1

HCUGH64	746600	9200	35 - 133	18952	Leu-19 to Lys-24, Met-1 to Trp-7, Arg-20 to Gln-33.	H0402: 1
HCUGH52	726052	9201	67 - 183	18953		H0402: 1
HCUGH44	716624	9202	1 - 60	18954		H0402: 1
HCUGH42	713782	9203	89 - 274	18955	Lys-1 to Lys-6	H0402: 1
HCUGD30	850041	9204	178 - 432	18956	Glu-7 to Gln-14, L0777: 2, L0599: 2, H0402: 1 and L0369: 1.	
HCUGC25	464029	9205	27 - 287	18957	Gly-67 to Glu-73, Val-82 to Tyr-87.	H0402: 1 and L0740: 1.
HCUGB93	850043	9206	2 - 187	18958	Tyr-40 to Gln-45.	H0402: 1
HCUGB58	736092	9207	30 - 113	18959	Lys-19 to Pro-28.	H0402: 1
HCUGB37	706468	9208	56 - 208	18960	Leu-26 to Arg-31, Gly-38 to Lys-51.	H0402: 1
HCUGB22	575851	9209	3 - 134	18961		H0402: 1
HCUGB20	669742	9210	113 - 226	18962		H0402: 1
HCUGB14	854035	9211	185 - 373	18963	Glu-27 to Ser-39.	H0402: 1
HCUFY79	494008	9212	511 - 245	18964		H0402: 1
	882298	9752	287 - 571	19504	Lys-12 to Glu-25, Gly-64 to Asp-79.	
HCUFW11	850054	9213	222 - 401	18965	Glu-1 to Trp-6, Met-21 to Ser-30, Pro-54 to Ala-60.	H0402: 1 and L0748: 1.
HCUFW09	625658	9214	1 - 186	18966	Lys-1 to Pro-6, Ser-8 to Thr-15.	H0402: 1 and L0599: 1.
HCUF737	706467	9215	239 - 370	18967		H0402: 1, L0021: 1, L0665: 1, L0770: 1, L0769: 1, L0803: 1, L0804: 1, L0791: 1, L0665: 1 and L0747: 1.
HCUFQ08	959567	9216	1 - 342	18968	Leu-21 to Asn-27.	H0402: 1 and L0309: 1.
HCUF711	967155	9217	2 - 220	18969	Lys-1 to His-6, Pro-20 to Ala-25, Pro-35 to Val-40, Leu-53 to Ser-61.	H0402: 1 and L0749: 1.
HCUF096	796434	9218	2 - 136	18970		H0402: 1
HCUF093	792376	9219	64 - 210	18971	Ser-1 to His-12,	H0402: 1

HCUF068	753083	9220	3 - 122	18972	Pro-15 to Ser-29.			
HCUF043	715337	9221	61 - 225	18973	Pro-6 to Thr-18. Gly-15 to Cys-33. Glu-40 to Lys-52.	H0402: 1		
HCUF036	575850	9222	79 - 366	18974	Thr-1 to Gly-9, Pro-68 to Glu-79, Pro-91 to Arg-96.	H0402: 1		
HCUF024	677273	9223	70 - 327	18975		H0402: 1	5q31.3-q33.1	109690, 109690, 131400, 154500, 159000, 180071, 181460, 222600, 222600, 222600, 272750, 600807, 601596, 602089
HCUF011	967156	9224	2 - 160	18976	Glu-33 to Thr-44.	H0402: 1 and L0682: 1.		
HCUFN78	773620	9225	1 - 168	18977		H0402: 1 and L0754: 1.		
HCUFM35	706461	9226	253 - 414	18978		H0402: 1, L0766: 1, L0647: 1, L0749: 1 and L0605: 1.		
HCUF140	711242	9227	96 - 326	18979	Ala-1 to Ser-8.	L0604: 2 and H0402: 1.		
HCUFK35	706460	9228	161 - 457	18980	Ser-18 to Ala-24, Gly-32 to Asp-41, Arg-52 to Ile-57.	L0605: 2, H0402: 1, L0777: 1 and L0604: 1.		
HCUFK09	961145	9229	1 - 333	18981		H0402: 1 and L0365: 1.		
HCUF108	850074	9230	51 - 215	18982	Leu-1 to Gly-7.	H0402: 1 and L0601: 1.		
HCUF150	974472	9231	90 - 425	18983		H0402: 1		
HCUFF74	765662	9232	11 - 112	18984		H0402: 1 and L0596: 1.		
HCUF355	731843	9233	48 - 152	18985	His-5 to Ser-10.	H0402: 1 and L0750: 1.		
HCUF354	730745	9234	145 - 312	18986	Pro-2 to Tyr-7, Pro-30 to Cys-36.	H0402: 1 and L0751: 1.		
HCUF070	757280	9235	346 - 534	18987	Pro-6 to Ser-12, Asp-19 to Ile-25.	L0748: 2 and H0402: 1.		
HCUF301	916805	9236	163 - 384	18988		L0369: 2 and H0402: 1.		
HCUEQ12	922536	9237	368 - 138	18989		H0402: 1 and L0731: 1.	Bq26	165215, 222900, 600049
HCUEP32	586999	9238	127 - 273	18990	Leu-7 to Gly-17, Leu-23 to Cys-28,	H0402: 1		

HCUE074	576576	9239	2 - 223	18991	Glu-35 to Lys-46. Val-24 to Gly-35, Pro-46 to Cys-51, Thr-57 to Lys-74.	H0402: 1	
HCUE020	669764	9240	267 - 464	18992	Lys-6 to Leu-16.	H0402: 1 and L0600: 1.	
HCUE093	792424	9241	52 - 240	18993	Gly-1 to Cys-6.	L0748: 2 and H0402: 1.	
HCUE015	660450	9242	236 - 370	18994	Glu-32 to Gly-38.	H0402: 1 and L0362: 1.	
HCUE024	677300	9243	171 - 341	18995		L0439: 2 and H0402: 1.	
HCUE007	953587	9244	211 - 462	18996	Glu-12 to Asp-21, Pro-33 to Ser-53, Leu-60 to Thr-69.	L0599: 2, H0402: 1 and L0769: 1.	
HCUEG27	683541	9245	314 - 544	18997		H0402: 1 and L0748: 1.	
HCUEF38	706450	9246	1 - 171	18998	Leu-16 to Asp-21.	H0402: 1	
HCUE005	932123	9247	3 - 194	18999	Ser-15 to Cys-31.	H0402: 1	
HCUDY74	839955	9248	133 - 321	19000	Ala-42 to Glu-49.	H0402: 1 and L0520: 1.	
HCUDX89	974483	9249	3 - 227	19001	Asp-11 to Arg-17, Arg-32 to Pro-44, Leu-53 to His-58, Glu-68 to Cys-75.	H0402: 1	
HCUDU18	850099	9250	1 - 261	19002	Arg-33 to Thr-39.	H0402: 1 and L0589: 1.	
HCUDQ81	902510	9251	144 - 329	19003	Lys-1 to Ile-8, Leu-24 to Gly-29, Glu-52 to Lys-62.	H0402: 1	
	928439	9753	440 - 3	19505	Lys-1 to Ile-8, Leu-24 to Gly-29, Glu-52 to Ser-64, Asn-88 to Asn-97, Glu-104 to Glu-109.		
HCUDQ45	881366	9252	295 - 591	19004	Pro-43 to Trp-48, Ser-81 to Ser-90.	H0402: 1	
HCUDN89	811185	9253	2 - 328	19005		H0402: 1 and L0756: 1.	
HCUDN82	779978	9254	185 - 310	19006		H0402: 1 and L0599: 1.	
HCUDN71	862116	9255	2 - 394	19007		H0402: 1 and L0766: 1.	
HCUDK08	959679	9256	188 - 316	19008		H0402: 1 and L0803: 1.	
HCUD117	664109	9257	57 - 227	19009	Leu-18 to Ser-25.	H0402: 1	
HCUDG26	681985	9258	226 - 369	19010		H0402: 1 and L0591: 1.	

HCUD007	953588	9259	2 - 235	19011		H0402: 1	
HCUCk38	850117	9260	1 - 165	19012		H0306: 1 and L0750: 1.	
HCUCJ14	659221	9261	189 - 353	19013	Trp-1 to Ser-9.	H0306: 1, L0748: 1 and L0749: 1.	
HCUCI23	676276	9262	119 - 208	19014		H0306: 1 and L0745: 1.	
HCUCJ29	608615	9263	2 - 343	19015	Ser-25 to Ser-30.	AR051: 9, AR050: 3, AR054: 2	
	637567	9754	2 - 337	19506	Ser-23 to Ser-28, Cys-79 to His-84.	H0306: 1	
HCUCG40	800153	9264	1 - 153	19016		AR054: 24, AR051: 19, AR050: 12	
HCUCG07	953823	9265	73 - 300	19017	Lys-19 to Lys-25.	H0306: 1 and L0387: 1.	
HCUCD83	781346	9266	115 - 381	19018		H0306: 1 and L0755: 1.	
HCUCD05	932333	9267	116 - 376	19019		L0588: 2, H0306: 1 and L0747: 1.	
HCUCBx45	850122	9268	125 - 400	19020	Ser-1 to Gly-7.	H0306: 1, L0800: 1, L0809: 1 and L0779: 1.	
HCUBV91	790368	9269	47 - 223	19021		H0306: 1 and L0596: 1.	
HCUBT35	850126	9270	121 - 291	19022	Glu-50 to Ala-57.	H0306: 1 and L0748: 1.	
HCUBS07	953861	9271	85 - 243	19023	Asp-13 to Trp-18, Leu-39 to Gly-46.	H0306: 1 and L0749: 1.	
HCUBP94	574198	9272	3 - 143	19024	Cys-11 to Gln-20.	H0306: 1	
HCUBP82	526773	9273	1 - 69	19025		H0306: 1	
HCUBP48	577289	9274	1 - 222	19026	Asn-12 to His-19, Lys-61 to Thr-72.	H0306: 1 and L0748: 1.	
HCUBP34	576462	9275	177 - 383	19027	Lys-1 to Thr-7.	H0306: 1	
HCUBP10	961259	9276	3 - 203	19028	Thr-17 to Glu-25, Leu-29 to Arg-44.	H0306: 1	
HCUBO67	526489	9277	128 - 232	19029	Pro-15 to Cys-28.	H0306: 1	
HCUBM73	577294	9278	1 - 201	19030	Pro-1 to Cys-16.	H0306: 1 and L0748: 1.	
HCUBM49	722190	9279	163 - 438	19031	Gly-84 to Thr-90.	L0749: 2, H0306: 1 and L0748: 1.	
HCUBL10	968223	9280	222 - 410	19032		H0306: 1 and L0761: 1.	



HCUBI45	723364	9281	194 - 367	19033	Lys-12 to Gly-21.	L0748: 2 and H0306: 1.
HCUBG69	757752	9282	2 - 238	19034		H0306: 1
HCUBG43	576468	9283	202 - 381	19035		H0306: 1
HCUBE89	785987	9284	2 - 169	19036	Glu-1 to Lys-13, Gly-34 to His-39.	L0777: 2 and H0306: 1.
HCUBE49	723175	9285	47 - 193	19037	Ser-3 to Gly-10, Leu-13 to His-20.	H0306: 1 and L0599: 1.
HCUBE22	409828	9286	338 - 499	19038		H0306: 1
HCUBB68	752247	9287	174 - 380	19039		H0306: 1 and L0748: 1.
HCUBA93	792515	9288	297 - 440	19040		H0306: 1 and L0591: 1.
HCUAZ01	917266	9289	176 - 298	19041	Pro-19 to Arg-34.	H0306: 1 and L0634: 1.
HCUAW03	924897	9290	193 - 426	19042	Thr-20 to Asp-25, His-42 to Ser-58, Asn-68 to Leu-73.	H0306: 1 and L0776: 1.
HCUAP34	706126	9291	8 - 97	19043		H0306: 1 and L0748: 1.
HCUAN95	796010	9292	2 - 100	19044		H0306: 1
HCUAN89	574275	9293	49 - 141	19045	Ser-21 to Lys-31.	H0306: 1
HCUAN53	728364	9294	2 - 133	19046		H0306: 1
HCUAM65	887470	9295	225 - 464	19047		AR050: 38, AR054: 30, AR051: 29 H0306: 1
HCUAL33	702677	9296	8 - 181	19048		L0749: 2, H0306: 1 and L0748: 1.
HCUAAG10	968229	9297	1 - 168	19049		H0306: 1 and L0601: 1.
HCUA80	862171	9298	3 - 140	19050	Ile-26 to Lys-31, Pro-39 to Pro-44.	L0772: 2 and H0306: 1.
HCUA01	850153	9299	53 - 313	19051	Pro-10 to Ser-16.	H0306: 1
HCUAA92	792947	9300	429 - 593	19052		H0306: 1, L0766: 1, L0745: 1 and L0752: 1.
HCFOPO9	862572	9301	438 - 638	19053	Arg-19 to Arg-25.	L0385: 1 and H0423: 1.
HCFOO25	678200	9302	115 - 246	19054		L0777: 1 and H0423: 1.
HCFOO01	916687	9303	230 - 412	19055		L0717: 1 and H0423: 1.
HCFOH45	850372	9304	145 - 474	19056	Ser-37 to Ser-42.	AR050: 16, AR054: 7, AR051: 4 H0423: 1

HCFOF34	955905	9305	79 - 249	19057	Ile-1 to Leu-6.	L0375: 1, L0542: 1, L0526: 1, L0749: 1, L0759: 1 and H0423: 1.	
HCFNQ62	745755	9306	2 - 151	19058		L0598: 2, UNKWN: 1, L0748: 1, L0749: 1 and H0423: 1.	
HCFNP09	961149	9307	145 - 393	19059	Ala-15 to Leu-27, Ser-42 to Glu-47.	L0804: 2, L0731: 2, L0747: 1 and H0423: 1.	
HCFNJ34	485822 494112	9308 9755	2 - 325 314 - 135	19060 19507	Arg-25 to Gly-36, Thr-55 to Tyr-60.	H0423: 1	
HCFNG63	745148	9309	45 - 245	19061	Pro-4 to Pro-67.	H0423: 1	
HCFNG10	848225	9310	140 - 1036	19062	Pro-4 to Phe-9, Glu-17 to Pro-24, Lys-51 to Ala-104, Lys-114 to Lys-140, Arg-153 to Gln-188, Glu-203 to Gly-234, Glu-247 to Thr-262.	L0766: 1 and H0423: 1.	
HCFNB09	625697	9311	39 - 137	19063	Thr-37 to Cys-43.	L0748: 1 and H0423: 1.	
HCFNA77	874777	9312	2 - 163	19064	Lys-13 to Gln-19, Ser-26 to Cys-40.	L0758: 1 and H0423: 1.	
HCFNA64	850391	9313	171 - 464	19065		L0777: 1 and H0423: 1.	
HCFNA21	671021	9314	115 - 258	19066	Leu-7 to Leu-13, Pro-15 to Cys-28, Arg-41 to Lys-46.	H0423: 1	
HCFMZ90	922112	9315	273 - 881	19067	Asp-1 to Arg-8, Lys-15 to Asn-20, Thr-74 to Leu-80, Pro-84 to Asp-90.	AR061: 2, AR089: 1, L0749: 1, L0731: 1, L0757: 1 and H0423: 1.	
HCFMIW71	920306	9316	195 - 407	19068	Pro-7 to Thr-12.	AR089: 10, AR061: 3, L0748: 3, L0749: 3, L0005: 1, L0777: 1, L0361: 1 and H0423: 1.	
HCFMU01	916695	9317	51 - 263	19069	Arg-37 to His-52.	L0766: 2 and H0423: 1.	
HCFNP46	463278	9318	54 - 245	19070	Asp-56 to Tyr-63.	L0756: 2, L0777: 2, L0749: 1	

HCFLM047	881505	9319	125 - 322	19071	Pro-14 to Thr-23, Leu-42 to Ser-51.	1 and H0423: 1. H0423: 1	20q11.2	139190, 139190, 224100, 601002, 601002, 601146, 601146, 601146
HCFLM02	920349	9320	278 - 607	19072	Phe-18 to Gly-23, Met-79 to Asp-89.	L0809: 1 and H0423: 1.		
HCFLM37	955281	9321	137 - 658	19073	Pro-58 to Cys-69, Pro-71 to Glu-77, Tyr-102 to Ser-107.	AR089: 5, AR061: 1 H0423: 1		
HCFLM46	719113	9322	109 - 321	19074		L0654: 1 and H0423: 1.		
HCFLY85	909182	9323	96 - 242	19075	Arg-16 to Arg-21, Trp-37 to Leu-48.	L0766: 2, L0747: 2 and H0423: 1.		
HCFLY53	727465	9324	71 - 265	19076		L0748: 3 and H0423: 1.		
HCFLY08	959620	9325	238 - 495	19077		L0599: 2, L0763: 1, L0805: 1, L0754: 1 and H0423: 1.		
HCFLY30	692781	9326	253 - 462	19078	Glu-9 to Ala-14, Gln-24 to Gln-31, Arg-41 to Pro-48.	L0748: 3 and H0423: 1.		
HCFLT86	785560	9327	246 - 560	19079	Tyr-49 to Ala-55.	L0749: 1 and H0423: 1.		
HCFLM03	850403	9328	219 - 395	19080	Asn-12 to Tyr-23.	L0581: 1 and H0423: 1.		
HCFLM03	850406	9329	351 - 698	19081	Pro-39 to Gly-47, Asn-55 to Ser-64, Ser-76 to Gln-83.	L0527: 2, L0366: 1 and H0423: 1.		
HCFLK10	964792	9330	230 - 460	19082		L0745: 1, L0750: 1 and H0423: 1.		
HCFLB24	502414	9331	3 - 248	19083	Ser-43 to Ala-49, Glu-76 to Met-82.	H0423: 1		
HCFLD43	511210	9756	433 - 251	19508	Pro-25 to Ser-33.			
	779327	9332	3 - 173	19084	Glu-38 to Gly-43.	L0586: 1, L0756: 1 and H0422: 1.	12q14	123829, 147570, 181430, 252940, 264700, 600808, 601284, 601769, 601769, 602116
HCFCV32	850413	9333	168 - 377	19085	Asp-22 to Gln-27, Pro-29 to Gly-36.	H0422: 1		

HCFCP77	772256	9334	87 - 194	19086	Glu-1 to Lys-15.	L0754: 1 and H0422: 1.
HCFCM75	850435	9335	182 - 355	19087	Lys-50 to Lys-64.	L0740: 1 and H0422: 1.
HCFCCK25	494159	9336	239 - 3	19088	Pro-38 to Leu-43, Ile-49 to Cys-55.	L0517: 1 and H0422: 1.
	519091	9757	212 - 376	19509	Lys-46 to Lys-57.	H0422: 1
HCFCG23	850426	9337	44 - 247	19089	Arg-58 to Glu-66.	H0422: 1
HCFCF76	973808	9338	1 - 291	19090	Arg-23 to Thr-28.	L0794: 2 and H0422: 1.
HCFCFC10	964782	9339	277 - 507	19091		H0422: 1
HCFCBX86	844884	9340	425 - 619	19092		
	874103	9758	273 - 485	19510		
HCFCBQ30	692787	9341	505 - 338	19093		L0748: 1, L0754: 1, L0745: 1 and H0422: 1.
HCFCBM75	766599	9342	137 - 316	19094		L0748: 1 and H0422: 1.
HCFCBM41	711631	9343	589 - 774	19095	Pro-31 to Lys-38.	L0748: 1 and H0422: 1.
HCFCBK28	706243	9344	4 - 171	19096		L0754: 1 and H0422: 1.
HCFCBK04	925601	9345	182 - 304	19097	Glu-1 to Trp-7, Gly-35 to His-41.	L0803: 3, L0777: 3, L0756: 2, L0780: 2, L0766: 1, L0774: 1, L0743: 1, L0757: 1, L0596: 1 and H0422: 1.
HCFCBI51	670066	9346	27 - 518	19098		H0422: 1
HCFCBA94	698647	9347	139 - 291	19099		L0794: 1, L0805: 1, L0439: 1, L0747: 1, L0779: 1, L0758: 1 and H0422: 1.
HCFCAZ12	970609	9348	3 - 188	19100	Asp-15 to Ser-22.	AR051: 13, AR054: 2, AR050: 1 H0422: 1
HCFCAZ07	849823	9349	222 - 1	19101	Ser-28 to Asn-40, Lys-68 to Lys-74.	L0588: 1 and H0422: 1.
HCFCAF08	959714	9350	117 - 275	19102	Leu-1 to Ala-7.	L0438: 2 and H0422: 1.
HCFCAC38	576723	9351	2 - 166	19103	Arg-1 to Lys-7, Arg-28 to Arg-34.	H0422: 1
HBVAB02	971578	9352	324 - 139	19104		S3016: 1, L0598: 1, L0763: 1 and L0665: 1.
HBUAG44	716685	9353	3 - 110	19105	His-1 to Ser-6, Ser-21 to Val-28.	S0182: 1 and L0766: 1.
HBUAC23	847698	9354	3 - 194	19106		S0182: 1 and L0748: 1.

HBTAE84	781946	9355	2 - 295	19107	Thr-41 to Phe-51, Leu-58 to Asn-63.	AR089: 1, AR061: 0 S0180: 1	
HBMXU73	953898	9356	507 - 635	19108	Tyr-7 to Thr-21.	L0770: 2, S0116: 1, L0775: 1 and L0439: 1.	
HBMXS23	675254	9357	216 - 455	19109	Gln-1 to Pro-7, Gln-43 to Ser-53, Lys-67 to Lys-74.	L0748: 4, L0605: 3, S0116: 1 and L0747: 1.	
HBMXL78	738763	9358	312 - 452	19110		S0116: 1 and L0731: 1.	
HBMXL41	711608	9359	2 - 118	19111		S0116: 1 and L0748: 1.	
HBMXJ70	757328	9360	291 - 398	19112		S0116: 1 and L0748: 1.	
HBMXG10	968055	9361	16 - 198	19113	Glu-15 to Trp-22, Cys-24 to Tyr-31, Ser-32 to Arg-57.	S0116: 1 and L0439: 1.	
HBMXF73	764551	9362	134 - 295	19114	Ser-37 to Met-44.	S0116: 1 and L0748: 1.	
HBMWX13	955208	9363	153 - 317	19115	Pro-3 to Pro-11.	S0116: 1 and L0665: 1.	
HBMWS75	767440	9364	108 - 350	19116	Met-1 to Gly-6, Lys-19 to Val-26.	S0116: 1 and L0748: 1.	
HBMWR62	754059	9365	177 - 395	19117		S0116: 1, L0754: 1 and L0589: 1.	
HBMWK06	936088	9366	142 - 249	19118	Lys-3 to Cys-13.	S0116: 1 and L0608: 1.	
HBMWZ8	685443	9367	3 - 134	19119	Gly-7 to Arg-13.	L0748: 2 and S0116: 1.	
HBMWE35	706034	9368	184 - 360	19120	Ser-1 to Ser-10, Pro-39 to His-45.	L0745: 2 and S0116: 1.	102578, 109700, 151670, 154550, 601780
HBMVQ26	546495	9369	175 - 303	19121	Ala-8 to Glu-20.	S0116: 1	
HBMVO41	712565	9370	225 - 359	19122		S0116: 1 and L0439: 1.	
HBMVJ33	702683	9371	75 - 242	19123		S0116: 1 and L0439: 1.	
HBMVG85	575418	9372	54 - 221	19124		L0439: 2 and S0116: 1.	
HBMVY18	666855	9373	37 - 159	19125		L0748: 4 and S0116: 1.	
HBMVE59	933208	9374	50 - 178	19126	Asn-4 to Ser-10.	L0748: 3 and S0116: 1.	
HBMVD05	932441	9375	175 - 357	19127	Met-21 to Lys-27, Asp-35 to Thr-40, Gln-42 to Tyr-47.	S0116: 1 and L0581: 1.	
HBMUW96	574517	9376	28 - 210	19128		S0116: 1	
HBMUW85	783416	9377	257 - 625	19129	Pro-11 to Gly-24.	S0116: 1, L0439: 1 and L0731: 1.	

HBMUW58	574513	9378	86 - 214	19130		S0116: 1	
HBMUW03	847787	9379	244 - 408	19131		S0116: 1 and L0758: 1.	
HBMU131	456760	9380	249 - 503	19132	Ser-22 to Gln-34.	S0116: 1	
HBMU059	739509	9381	55 - 249	19133	Arg-10 to Thr-16.	S0116: 1 and L0758: 1.	
HBMU023	425961	9382	464 - 619	19134		S0116: 1 and L0766: 1.	
	675305	9759	155 - 337	19511			
	675308	9760	287 - 189	19512	Gln-16 to Lys-33.		
HBMU091	789320	9383	262 - 603	19135	Asp-43 to His-71.	S0116: 1 and L0748: 1.	
HBMU013	950984	9384	177 - 416	19136		S0116: 1 and L0740: 1.	
HBMTX71	760605	9385	122 - 331	19137	Ile-1 to Leu-7, Lys-33 to Ser-38, Gln-52 to Gly-66.	S0116: 1 and L0748: 1.	
HBMTS23	676310	9386	44 - 298	19138	Thr-34 to Asp-39, Pro-75 to Ser-82.	S0116: 1, L0438: 1 and L0439: 1.	
HBMTX29	847785	9387	207 - 497	19139		L0599: 2, S0116: 1, L0763: 1 and L0748: 1.	
HBMTM67	751907	9388	162 - 308	19140		S0116: 1 and L0754: 1.	
HBMTD69	754179	9389	199 - 324	19141		S0116: 1 and L0754: 1.	
HBMTB85	923730	9390	192 - 446	19142		S0116: 1 and L0750: 1.	
HBMTB34	706024	9391	178 - 474	19143	Leu-11 to Asn-19, Arg-39 to Tyr-44, Gly-49 to Ala-55.	L0749: 2 and S0116: 1.	
HBMSX83	863883	9392	1 - 162	19144	Arg-1 to Ser-8.	S0116: 1 and L0766: 1.	
HBMDS02	920096	9393	219 - 380	19145	Tyr-12 to Tyr-17.	H0421: 1 and L0777: 1.	
HBMDN16	661947	9394	265 - 495	19146		H0421: 1 and L0439: 1.	
HBMDM25	678127	9395	380 - 571	19147	Asn-14 to Ile-20, Cys-30 to Tyr-36.	H0421: 1, L0766: 1 and L0439: 1.	
HBMDL27	683427	9396	280 - 501	19148	Ser-6 to Arg-26, Ser-28 to Arg-38, Phe-63 to Tyr-74.	H0421: 1 and L0748: 1.	
HBMDDF52	727169	9397	365 - 547	19149	Lys-18 to Gly-23.	H0421: 1 and L0599: 1.	
HBMDD72	879813	9398	67 - 387	19150	Pro-2 to Gln-10.	H0421: 1	
HBMCZ30	692733	9399	324 - 530	19151	Arg-1 to Gly-11, Ala-15 to Ser-22, Gln-40 to Gly-45.	H0421: 1 and L0602: 1.	

HBMCCT24	677209	9400	133 - 285	19152			H0421: 1
HBMCCT09	625627	9401	436 - 626	19153	Phe-1 to Asn-11.		L0754: 2 and H0421: 1.
HBMCSC92	792736	9402	2 - 181	19154	Ala-1 to Lys-12.		H0421: 1 and L0748: 1.
HBMCSC55	731802	9403	76 - 219	19155			L0746: 2, H0421: 1 and L0777: 1.
HBMCRC25	678164	9404	275 - 613	19156			L0766: 3, H0421: 1 and L0741: 1.
HBMCQC95	888393	9405	181 - 372	19157			AR050: 133, AR054: 121, AR051: 115
HBMCQ84	783043	9406	3 - 170	19158	Gln-21 to Val-26, Lys-42 to Ile-47.		H0421: 1
HBMCFC20	646279	9407	106 - 495	19159			H0421: 1 and L0748: 1.
HBMCB55	731800	9408	1 - 228	19160	Pro-13 to Arg-21.		H0421: 1, L0384: 1 and L0592: 1.
HBMBX72	911168	9409	438 - 719	19161	Trp-10 to Ala-18, Arg-36 to Pro-93.		H0421: 1 and L0748: 1.
HBMBX64	746633	9410	91 - 249	19162			H0421: 1
HBMBX55	668981	9411	199 - 327	19163	Gln-19 to Ala-31.		L0754: 2 and H0421: 1.
HBMBU52	973805	9412	97 - 282	19164			H0421: 1, L0748: 1, L0439: 1 and L0596: 1.
HBMBN85	783520	9413	18 - 212	19165	Arg-25 to Cys-32.		H0421: 1 and L0794: 1.
HBMBI49	723094	9414	316 - 456	19166	Thr-1 to Ser-9.		H0421: 1
HBMBF89	912789	9415	73 - 579	19167			L0748: 2 and H0421: 1.
HBMBF78	623421	9416	500 - 892	19168			H0421: 1, L0749: 1 and L0755: 1.
HBMBE68	879588	9417	2 - 400	19169			H0421: 1
HBMBG66	859500	9418	87 - 353	19170	His-12 to Cys-21.		H0421: 1 and L0776: 1.
HBMBB57	734915	9419	1 - 147	19171			H0421: 1 and L0747: 1.
HBMBB45	578817	9420	12 - 293	19172	Val-6 to Lys-18, Arg-31 to Arg-42, Arg-48 to Asn-55.		H0421: 1
HBMAC54	930481	9421	191 - 433	19173			H0421: 1
HBUNC01	915970	9422	120 - 299	19174			T0071: 1 and L0051: 1.
HBINB52	726475	9423	160 - 357	19175	Pro-15 to Cys-23.		H0318: 1 and L0766: 1.
							AR061: 4, AR089: 4

HBIMW95	797604	9424	497 - 802	19176	Thr-7 to Asp-21, Thr-42 to Ser-54, Ser-16 to Glu-22.	H0318: 1, L0766: 1 and L0748: 1.	
HBIMW03	921996	9425	149 - 310	19177		L0745: 2, H0318: 1, L0439: 1, L0746: 1 and L0779: 1.	
HBIMU53	727987	9426	88 - 285	19178	Arg-1 to Lys-6, Pro-17 to Phe-27.	H0318: 1 and L0439: 1.	
HBIMS40	710880	9427	101 - 235	19179		H0318: 1 and L0748: 1.	
HBIMR59	738615	9428	1 - 204	19180		H0318: 1 and L0748: 1.	
HBIML90	787320	9429	328 - 164	19181		H0318: 1, L0598: 1 and L0754: 1.	
HBIML80	775435	9430	165 - 305	19182	Ala-14 to Thr-19, Cys-29 to Trp-36.	H0318: 1 and L0750: 1.	
HBIME11	972939	9431	31 - 234	19183		H0318: 1	
HBIMC69	754875	9432	62 - 262	19184		H0318: 1 and L0748: 1.	
HBIMA80	777456	9433	42 - 215	19185		H0318: 1 and L0748: 1.	
HBILX09	625319	9434	290 - 442	19186	Gln-4 to Lys-14.	H0318: 1 and L0605: 1.	
HBILW74	765352	9435	88 - 354	19187	Ser-21 to Gly-27.	H0318: 1 and L0748: 1.	
HBILU36	847851	9436	68 - 439	19188	Glu-19 to Ser-30.	H0318: 1 and L0748: 1.	
HBILR37	849633	9437	2 - 328	19189	Asn-1 to His-11.	AR089: 3, AR061: 1 L0593: 2, L0594: 2, H0318: 1 and L0592: 1.	
HBILR31	900883	9438	3 - 956	19190	His-7 to Gly-17, Gly-28 to Gln-33, Asp-51 to Ala-59, Glu-94 to Glu-101, Pro-118 to Val-123, Pro-143 to Gly-152, Gln-203 to Glu-211, Ser-213 to Thr-226, Ser-233 to Gln-239, Arg-274 to Ser-279, His-288 to Pro-294.	AR061: 4, AR089: 3, AR051: 2, AR050: 1, AR054: 1 H0318: 1	
HBILF04	614915	9439	40 - 282	19191			
HBILE70	847853	9440	586 - 834	19192	Asn-25 to Ser-34.	H0318: 1 and L0591: 1. H0318: 1 and L0777: 1.	



HBJKI77	772000	9441	98 - 337	19193	Gly-50 to Ser-57.	L0747: 2 and H0318: 1.	
HBJKG07	952843	9442	530 - 802	19194	Pro-12 to Met-21.	H0318: 1 and L0800: 1.	
HBJKF02	919446	9443	246 - 398	19195	Glu-1 to Gly-8, Asp-32 to Glu-40.	H0318: 1 and L0766: 1.	
HBJKD77	771975	9444	179 - 379	19196		H0318: 1	
HBJKD64	746398	9445	3 - 143	19197	Ser-40 to Glu-47.	H0318: 1	
HBJKD60	740171	9446	666 - 902	19198		H0318: 1 and L0754: 1.	
HBJKD50	724159	9447	1 - 204	19199	Arg-1 to Tyr-6.	H0318: 1	
HBJKD49	847857	9448	3 - 215	19200		H0318: 1	
HBJKD40	710931	9449	36 - 179	19201		H0318: 1	
HBJKA77	771982	9450	2 - 178	19202		H0318: 1 and L0777: 1.	
HBJKA01	916077	9451	19 - 153	19203	Lys-37 to Lys-45.	H0318: 1 and L0646: 1.	18p11.31-p11.2 202200
HBJX33	835733	9452	79 - 393	19204		AR061: 6, AR089: 4 H0318: 1	
HBJTT12	894345	9453	3 - 596	19205	Phe-12 to Gln-21, Asp-27 to Thr-38, Pro-44 to Ser-52, Asn-54 to Ser-74, Ser-86 to Thr-92, Ala-117 to Phe-124, Gly-137 to Thr-142, Gly-182 to Ser-187.	AR061: 2, AR089: 1 L0749: 2 and H0318: 1.	
HBJIN02	919371	9454	306 - 548	19206	Thr-1 to Gly-9, Glu-29 to Ala-36, Pro-43 to Asn-50.	L0239: 1 and H0318: 1.	
HBJIL10	937583	9455	3 - 119	19207	Val-23 to Asn-30.	H0318: 1 and L0766: 1.	
HBJIE44	716409	9456	195 - 374	19208	Phe-5 to Trp-19, His-45 to Lys-53.	L0439: 2, L0780: 2 and H0318: 1.	
HBJIA32	699059	9457	381 - 683	19209	Asp-39 to Asn-46, Ser-61 to Gln-66.	L0744: 3, H0318: 1 and L0743: 1.	
HBJJA01	916078	9458	543 - 1055	19210	Asn-66 to Tyr-71, Gly-102 to Phe-109, Lys-120 to Asn-126.	L0766: 5, L0777: 3, L0779: 2, L0731: 2, H0318: 1 and L0803: 1.	
HBJIL42	597100	9459	280 - 411	19211		H0318: 1 and L0754: 1.	
HBJIL36	861363	9460	2 - 370	19212	Leu-62 to Ser-68.	H0318: 1, L0780: 1 and	

HBJH60	930448	9461	1 - 234	19213	Gly-117 to Gln-123, Pro-35 to Pro-42.	L0759: 1. AR089: 35, AR061: 8 H0318: 1, L0520: 1 and L0779: 1.		
HBJH51	725081	9462	86 - 205	19214	Leu-18 to Leu-28,	H0318: 1 and L0748: 1.		
HBJH31	697753	9463	482 - 255	19215	Leu-32 to Ala-60, Arg-69 to Gln-76.	L0748: 4 and H0318: 1.		
HBJH69	754891	9464	123 - 251	19216		L0748: 2 and H0318: 1.		
HBJH80	784267	9465	198 - 428	19217		H0318: 1, L0759: 1 and L0596: 1.		
HBJH73	971377	9466	241 - 1059	19218	His-8 to Gly-18, Thr-52 to Tyr-63, Tyr-93 to Gly-105, Arg-114 to Gln-130, Asn-139 to Cys-147, Cys-149 to Asp-159, Arg-196 to Trp-202.	AR050: 428, AR054: 421, AR051: 340 H0318: 1		
HBJH74	765380	9467	112 - 444	19219	Pro-4 to Leu-11, Gly-39 to Arg-53.	L0748: 2 and H0318: 1.		
HBJH20	907575	9468	125 - 298	19220	Ser-10 to Arg-15.	L0589: 2 and H0318: 1.		
HBJH04	852040	9469	171 - 347	19221	Arg-1 to Ser-6,	H0318: 1 and L0748: 1.		
HBJH196	828996	9470	237 - 437	19222	Thr-28 to Trp-38.	H0318: 1 and L0759: 1.	9q34.2-q34.3	120215, 120215, 190198
HBJH02	919450	9471	202 - 321	19223	Gly-17 to Lys-27, Gln-30 to Val-35.	H0318: 1, L0766: 1 and L0608: 1.		
HBJG03	923800	9472	35 - 226	19224	Ala-16 to Ser-22, Pro-31 to Leu-38, Ser-41 to Gly-48.	AR061: 5, AR089: 3 L0769: 2, H0318: 1 and L0787: 1.		
HBJFR45	722105	9473	309 - 518	19225	Gln-20 to Ser-34, Cys-53 to Asp-58.	H0318: 1, L0789: 1 and L0748: 1.		
HBJFQ08	959190	9474	139 - 339	19226		H0318: 1		
HBJFP52	728580	9475	165 - 362	19227	Asp-1 to Gly-6, Thr-38 to Arg-46.	L0439: 2 and H0318: 1.		
HBJFP08	959688	9476	191 - 388	19228	Arg-46 to Lys-51.	H0318: 1 and L0777: 1.		
HBJFK85	783432	9477	1 - 111	19229	Pro-20 to Ile-25.	L0439: 2 and H0318: 1.		

HBJFI48	847899	9478	271 - 483	19230		AR051: 32, AR054: 28, AR050: 23, H0318: 1	
HBJFI30	691056	9479	33 - 452	19231	Pro-1 to Trp-6, Glu-55 to Glu-64.	L0748: 2, L0740: 2 and H0318: 1.	
HBJFIH60	740543	9480	242 - 388	19232	Ala-5 to Arg-14, Tyr-22 to His-28.	L0756: 4, L0600: 2, H0318: 1 and L0754: 1.	
HBJFIH06	935587	9481	333 - 689	19233	Pro-8 to Ser-14, Asn-32 to Gly-38, Arg-75 to Ser-82, Ser-91 to Glu-96.	H0318: 1 and L0592: 1.	
HBJFIH41	711591	9482	3 - 377	19234		L0608: 2, H0318: 1 and L0748: 1.	
HBJFIH21	671205	9483	211 - 399	19235	Leu-3 to Gly-16.	L0766: 3, L0748: 3, H0318: 1, L0789: 1 and L0749: 1.	
HBJFIH23	423885	9484	3 - 458	19236		AR061: 8, AR089: 4	
HBJFIH10	968162	9485	44 - 259	19237		L0439: 3 and H0318: 1.	
HBJFIH89	787044	9486	104 - 322	19238	Asp-9 to Gly-26.	L0748: 2, H0318: 1 and L0749: 1.	
HBJFIH09	487020	9487	66 - 272	19239	Asn-18 to His-23, Glu-38 to Glu-45.	H0318: 1	
	490958	9761	284 - 141	19513			
HBJFIH70	757374	9488	283 - 471	19240	Glu-1 to Arg-8.	L0754: 2 and H0318: 1.	
HBJFIH68	752251	9489	307 - 465	19241		L0748: 2 and H0318: 1.	
HBJFIH45	722107	9490	49 - 153	19242		H0318: 1 and L0740: 1.	
HBJFIH04	615515	9491	329 - 493	19243		L0748: 2 and H0318: 1.	
HBJFIH06	935967	9492	99 - 200	19244		H0318: 1 and L0748: 1.	
HBJFIH72	766187	9493	2 - 184	19245		L0439: 2 and H0318: 1.	
HBJFIH51	485130	9494	3 - 206	19246		H0318: 1	
HBJFIH05	935058	9495	273 - 473	19247	His-4 to Leu-15.	S0005: 1 and H0318: 1.	
HBJFIH07	573809	9496	160 - 438	19248	Arg-2 to Leu-9, Arg-38 to Cys-54.	H0318: 1	
HBJFIH73	573834	9497	1 - 81	19249	Gly-1 to His-18.	H0318: 1	
HBJFIH54	625943	9498	308 - 445	19250	Ala-22 to Trp-27.	H0318: 1	

HBIEA38	577103	9499	12 - 257	19251	Lys-1 to Glu-10.	L0749: 4 and H0318: 1.
HBIEA37	839964	9500	1 - 108	19252	Lys-10 to Pro-20.	H0318: 1
HBIEA13	419107	9501	56 - 268	19253		H0318: 1
HBIDZ49	847928	9502	142 - 303	19254		L0758: 2, H0318: 1 and L0752: 1.
HBIDR24	677407	9503	94 - 219	19255		H0318: 1 and L0748: 1.
HBIDQ86	784654	9504	3 - 116	19256		H0318: 1 and L0756: 1.
HBIDM70	757435	9505	313 - 399	19257	Leu-1 to Tyr-6.	H0318: 1 and L0754: 1.
HBIDL24	678272	9506	180 - 440	19258	Glu-48 to Gly-53.	L0748: 3 and H0318: 1.
HBICV85	900955	9507	538 - 735	19259		AR054: 10, AR050: 8, AR051: 2
HBICQ65	876430	9508	68 - 286	19260	Gly-35 to Ser-48.	H0318: 1, L0748: 1 and L0754: 1.
HBICJ82	779645	9509	315 - 479	19261		H0318: 1
HBICE07	954090	9510	1 - 132	19262	Glu-11 to Arg-19.	H0318: 1 and L0748: 1.
HBICB83	781411	9511	2 - 370	19263		H0318: 1 and L0748: 1.
HBIBR04	847952	9512	115 - 309	19264		H0318: 1 and L0748: 1.
HBIAJ95	796659	9513	175 - 276	19265		H0318: 1 and L0752: 1.
HBIAO55	732436	9514	40 - 171	19266	Thr-24 to Gly-37.	H0318: 1 and L0748: 1.
HBIAJ49	723164	9515	320 - 439	19267		H0318: 1 and L0748: 1.
HBIAI50	724619	9516	1 - 345	19268		H0318: 1 and L0748: 1.
HBIAH27	682941	9517	104 - 235	19269	Gly-32 to Tyr-41, Leu-64 to Asp-71.	L0731: 4, H0318: 1, L0783: 1, L0809: 1 and L0757: 1.
HBIAE32	699695	9518	214 - 408	19270	Pro-29 to Pro-35, Ile-3 to Leu-11, Lys-45 to Asp-50, Val-60 to Cys-65.	H0318: 1
HBIAJ77	772422	9519	80 - 325	19271	Asn-17 to Trp-23, Ala-33 to Ile-47.	H0318: 1, L0664: 1, L0438: 1 and L0749: 1.
HBIAJ49	722195	9520	175 - 471	19272	Tyr-39 to Val-44.	H0318: 1 and L0748: 1.
HBIAJ49	722195	9520	175 - 471	19272	Tyr-39 to Val-44.	L0766: 2, L0803: 2 and H0318: 1.
HBIAJ28	847966	9521	96 - 272	19273	Gly-38 to Lys-45.	H0318: 1 and L0485: 1.
HBIAJ15	660552	9522	31 - 390	19274	Glu-71 to Phe-79, Glu-98 to Ala-103, Ala-111 to Met-117.	H0318: 1 and L0759: 1.

HBD4E47	720008	9523	364 - 486	19275	Phe-25 to Pro-34.	L0363: 1, L0766: 1, L0804: 1 and S0308: 1.	
HBDAD64	864344	9524	240 - 548	19276	Gln-8 to Trp-30, Arg-77 to Val-95.	L0754: 2 and S0308: 1.	
HBDAD16	661560	9525	260 - 388	19277	Tyr-2 to His-10.	L0809: 1, L0748: 1 and S0308: 1.	
HBCCO10	963157	9526	184 - 372	19278	Thr-30 to Gln-37, Gln-42 to Arg-49.	L0749: 2 and H0370: 1.	
HBCCO05	930956	9527	72 - 365	19279	Pro-5 to His-14, Ser-58 to Ala-66.	H0370: 1 and L0748: 1.	
HBCCE11	963869	9528	336 - 527	19280	Arg-9 to Cys-21, Pro-35 to Trp-41.	H0370: 1, L0766: 1 and L0803: 1.	
HBCCD06	938319	9529	1 - 408	19281	Arg-1 to Gln-6, Ala-10 to Ala-15, Ala-35 to Ser-43.	H0370: 1 and L0759: 1.	
HBCCB51	975256	9530	48 - 227	19282	Lys-46 to Gly-60.	H0370: 1	
HBCBR08	958151	9531	3 - 428	19283	Pro-18 to Gln-23, Pro-72 to Gln-81, Pro-87 to Ser-93, Asp-112 to Leu-119, Pro-121 to Ala-135.	H0370: 1 and L0766: 1.	103850, 114835, 116800, 140100, 140100, 192090, 192090, 192090, 245900, 245900, 276600, 600223
HBCBN51	952057	9532	358 - 738	19284	Arg-7 to Ser-19, Leu-97 to Ala-106.	AR089: 28, AR061: 8 L0143: 2, H0370: 1 and L0595: 1.	
HBCBN06	934110	9533	25 - 231	19285		H0370: 1 and L0748: 1.	
HBCBG04	926761	9534	213 - 596	19286	Lys-13 to Leu-18.	L0749: 2 and H0370: 1.	
HBCBF12	969578	9535	1 - 225	19287		H0370: 1, L0659: 1 and L0758: 1.	
HBCBE57	848322	9536	426 - 677	19288	Gly-51 to Gly-56, Pro-62 to Gly-74.	H0370: 1, L0748: 1, L0749: 1 and L0591: 1.	
HBCBB22	848325	9537	566 - 868	19289		H0370: 1, L0744: 1, L0779: 1, L0777: 1 and L0601: 1.	
HBCAW52	573919	9538	65 - 247	19290	Pro-7 to Pro-19, Ser-26 to Gly-34.	H0370: 1	

HBCAT10	968195	9539	84 - 218	19291	Tyr-9 to Gly-15, Lys-34 to Gln-41.	H0370: 1 and L0759: 1.	
HBCAS32	699489	9540	106 - 264	19292	Leu-1 to Gln-6, Pro-13 to His-18, Arg-35 to Val-43, Gly-18 to Pro-24, Pro-26 to Gln-41.	H0370: 1 and L0744: 1.	
HBCAQ85	783431	9541	2 - 307	19293	Arg-8 to Asp-17.	L0439: 2 and H0370: 1.	
HBCAQ42	864356	9542	182 - 430	19294	Arg-8 to Asp-17.	H0370: 1 and L0365: 1.	
HASCG58	738423	9543	21 - 236	19295		L0748: 3, L0731: 2, H0274: 1 and L0754: 1.	
HASAW90	789112	9544	494 - 655	19296	Asn-27 to Ser-38.	L0740: 2, L0758: 2, H0004: 1 and L0439: 1.	
HASAR74	879377	9545	745 - 1068	19297		H0004: 1	
	883501	9762	251 - 643	19514			
HASAC10	968746	9546	3 - 287	19298	Arg-30 to Tyr-38, Met-71 to Arg-76, His-78 to Val-86, Glu-89 to Gly-95.	H0004: 1, L0639: 1, L0748: 1 and L0779: 1.	

- [044] The first column in Table 1A provides a unique "Clone ID NO:Z" for a cDNA clone related to each contig sequence disclosed in Table 1A. This clone ID references the cDNA clone which contains at least the 5' most sequence of the assembled contig and at least a portion of SEQ ID NO:X was determined by directly sequencing the referenced clone. The reference clone may have more sequence than described in the sequence listing or the clone may have less. In the vast majority of cases, however, the clone is believed to encode a full-length polypeptide. In the case where a clone is not full-length, a full-length cDNA can be obtained by methods known in the art and/or as described elsewhere herein.
- [045] The second column in Table 1A provides a unique "Contig ID" identification for each contig sequence. The third column provides the "SEQ ID NO:X" identifier for each of the immune/hematopoietic associated contig polynucleotide sequences disclosed in Table 1A. The fourth column, "ORF (From-To)", provides the location (i.e., nucleotide position numbers) within the polynucleotide sequence "SEQ ID NO:X" that delineate the preferred open reading frame (ORF) shown in the sequence listing and referenced in Table 1A, column 5, as SEQ ID NO:Y. Where the nucleotide position number "To" is lower than the nucleotide position number "From", the preferred ORF is the reverse complement of the referenced polynucleotide sequence.
- [046] The fifth column in Table 1A provides the corresponding SEQ ID NO:Y for the polypeptide sequence encoded by the preferred ORF delineated in column 4. In one embodiment, the invention provides an amino acid sequence comprising, or alternatively consisting of, a polypeptide encoded by the portion of SEQ ID NO:X delineated by "ORF (From-To)". Also provided are polynucleotides encoding such amino acid sequences and the complementary strand thereto.
- [047] Column 6 in Table 1A lists residues comprising epitopes contained in the polypeptides encoded by the preferred ORF (SEQ ID NO:Y), as predicted using the algorithm of Jameson and Wolf, (1988) Comp. Appl. Biosci. 4:181-186. The Jameson-Wolf antigenic analysis was performed using the computer program PROTEAN (Version 3.11 for the Power MacIntosh, DNASTAR, Inc., 1228 South Park Street Madison, WI). In preferred embodiments, polypeptides of the invention comprise, or alternatively consist of, at least one, two, three, four, five or more of the predicted epitopes as described in Table 1A. It will be appreciated that depending on the

analytical criteria used to predict antigenic determinants, the exact address of the determinant may vary slightly.

[048] Column 7 in Table 1A provides an expression profile and library code: count for each of the contig sequences (SEQ ID NO:X) disclosed in Table 1A, which can routinely be combined with the information provided in Table 4 and used to determine the normal or diseased tissues, cells, and/or cell line libraries which predominantly express the polynucleotides of the invention. The first number in column 7 (preceding the colon), represents the tissue/cell source identifier code corresponding to the code and description provided in Table 4. For those identifier codes in which the first two letters are not "AR", the second number in column 7 (following the colon) represents the number of times a sequence corresponding to the reference polynucleotide sequence was identified in the tissue/cell source. Those tissue/cell source identifier codes in which the first two letters are "AR" designate information generated using DNA array technology. Utilizing this technology, cDNAs were amplified by PCR and then transferred, in duplicate, onto the array. Gene expression was assayed through hybridization of first strand cDNA probes to the DNA array. cDNA probes were generated from total RNA extracted from a variety of different tissues and cell lines. Probe synthesis was performed in the presence of  $^{33}\text{P}$  dCTP, using oligo(dT) to prime reverse transcription. After hybridization, high stringency washing conditions were employed to remove non-specific hybrids from the array. The remaining signal, emanating from each gene target, was measured using a Phosphorimager. Gene expression was reported as Phosphor Stimulating Luminescence (PSL) which reflects the level of phosphor signal generated from the probe hybridized to each of the gene targets represented on the array. A local background signal subtraction was performed before the total signal generated from each array was used to normalize gene expression between the different hybridizations. The value presented after "[array code]:" represents the mean of the duplicate values, following background subtraction and probe normalization. One of skill in the art could routinely use this information to identify normal and/or diseased tissue(s) which show a predominant expression pattern of the corresponding polynucleotide of the invention or to identify polynucleotides which show predominant and/or specific tissue and/or cell expression. The sequences disclosed herein have been determined to be predominantly



expressed in immune/hematopoietic tissues, including normal and diseased immune/hematopoietic tissues (See Table 1A, column 7 and Table 4).

[049] Column 8 in Table 1A provides a chromosomal map location for certain polynucleotides of the invention. Chromosomal location was determined by finding exact matches to EST and cDNA sequences contained in the NCBI (National Center for Biotechnology Information) UniGene database. Each sequence in the UniGene database is assigned to a "cluster"; all of the ESTs, cDNAs, and STSs in a cluster are believed to be derived from a single gene. Chromosomal mapping data is often available for one or more sequence(s) in a UniGene cluster; this data (if consistent) is then applied to the cluster as a whole. Thus, it is possible to infer the chromosomal location of a new polynucleotide sequence by determining its identity with a mapped UniGene cluster.

[050] A modified version of the computer program BLASTN (Altschul et al., J. Mol. Biol. 215:403-410 (1990), and Gish et al., Nat. Genet. 3:266-272 (1993)) was used to search the UniGene database for EST or cDNA sequences that contain exact or near-exact matches to a polynucleotide sequence of the invention (the 'Query'). A sequence from the UniGene database (the 'Subject') was said to be an exact match if it contained a segment of 50 nucleotides in length such that 48 of those nucleotides were in the same order as found in the Query sequence. If all of the matches that met this criteria were in the same UniGene cluster, and mapping data was available for this cluster, it is indicated in Table 1A under the heading "Cytologic Band". Where a cluster had been further localized to a distinct cytologic band, that band is disclosed; where no banding information was available, but the gene had been localized to a single chromosome, the chromosome is disclosed.

[051] Once a presumptive chromosomal location was determined for a polynucleotide of the invention, an associated disease locus was identified by comparison with a database of diseases which have been experimentally associated with genetic loci. The database used was the Morbid Map, derived from OMIM™ (*supra*). If the putative chromosomal location of a polynucleotide of the invention (Query sequence) was associated with a disease in the Morbid Map database, an OMIM reference identification number was noted in column 9, Table 1A, labeled "OMIM Disease Reference(s)". Table 5 is a key to the OMIM reference identification numbers (column 1), and provides a description of the associated disease in Column 2.

**TABLE 1B**

Clone ID NO:Z	SEQ ID NO:X	CONTIG ID:	BAC ID: A	SEQ ID NO:B	EXON From-To
HAMHB21	11	961376	AL035530	19515	1-137 465-2035 2761-2939 3499-3663 3841-4296 5031-5501 5707-5905 5946-6330 6790-6899 6957-7401 7628-7818 7889-10548
HAMHB21	11	961376	AL035530	19516	1-577
HASAX16	12	573692	AL358796	19517	1-1065
HASAX16	12	573692	AL356513	19518	1-1281
HASAX16	12	573692	AL358796	19519	1-964
HASAX16	12	573692	AL356513	19520	1-540
HASAX16	12	573692	AL356513	19521	1-967
HASAY74	13	526312	AC006479	19522	1-1081
HASAY74	13	526312	AC006479	19523	1-1052
HASAY74	13	526312	AC006479	19524	1-117
HASAY89	14	958768	AC012580	19525	1-874
HASAY89	14	958768	AL133502	19526	1-874
HASAY89	14	958768	AC012580	19527	1-87
HASAY89	14	958768	AC012580	19528	1-1034 1426-2177
HASAY89	14	958768	AL133502	19529	1-1034 1426-2177
HASAY94	15	521835	AC022702	19530	1-220 2365-2620 2992-3310 3432-3987 4545-5235 5266-5325 5814-6468 6801-6965 7327-7763 7979-8172
HASAY94	15	521835	AC025796	19531	1-272
HASAY94	15	521835	AC024998	19532	1-272
HASAY94	15	521835	AL365438	19533	1-272
HASAY94	15	521835	AL390122	19534	1-272
HASAY94	15	521835	AL133216	19535	1-306 1488-1890 2450-2722 3082-3400 3526-4081 4304-5314
HASAY94	15	521835	AF198096	19536	1-308 1490-1896 2457-2728 2816-3407 3532-4087

					4313-5008 5584-6209
HASAY94	15	521835	AC024998	19537	1-592
HASAY94	15	521835	AC022702	19538	1-316
HASAY94	15	521835	AC025796	19539	1-592
HASAY94	15	521835	AL365438	19540	1-591
HASAY94	15	521835	AL390122	19541	1-592
HASAY94	15	521835	AL133216	19542	1-750
HASAY94	15	521835	AL133216	19543	1-138 734-1117 1716-2301 2496-3003 3142-3588 5476-6185 6679-7322 7428-7952 8163-8628 9071-9154 9380-9538 10422-10640 10673-10765 10780-10828 11018-11735 12735-13548 13651-14193 14663-14949 15056-15454 17688-18060 19315-19659
HASAY94	15	521835	AF198096	19544	1-2408
HASAY94	15	521835	AF198096	19545	1-373
HBCAL39	17	964871	AL023808	19546	1-606
HBCAL39	17	964871	AL354975	19547	1-609
HBCAL39	17	964871	AL355583	19548	1-609
HBCAL39	17	964871	AL117337	19549	1-607
HBCAL39	17	964871	AL161931	19550	1-607
HBCAL39	17	964871	AL022345	19551	1-83 1585-1635 1808-2378 5485-5902 6116-6277 8376-8779 8822-8972 9168-9821 11260-11538 13579-13698 17448-17520 17571-17848 18839-19282 19624-20151 20479-21084 21175-21448 32819-33061 34887-35180 35454-36250 37565-38021 38576-38855

					40356-40851 40884-41362 43851-44422 45111-46319 46743-49458 50723-51179 52126-52399 53142-53345 55328-55452 55462-56374 58253-58708
HBCAL39	17	964871	AF205588	19552	1-607
HBCAL39	17	964871	AL354975	19553	1-274
HBCAL39	17	964871	AL023808	19554	1-528
HBCAL39	17	964871	AL354975	19555	1-528
HBCAL39	17	964871	AL355583	19556	1-274
HBCAL39	17	964871	AL355583	19557	1-528
HBCAL39	17	964871	AL117337	19558	1-273
HBCAL39	17	964871	AL117337	19559	1-526
HBCAL39	17	964871	AL161931	19560	1-273
HBCAL39	17	964871	AL161931	19561	1-526
HBCAL39	17	964871	AL022345	19562	1-465
HBCAL39	17	964871	AF205588	19563	1-526
HBCAL39	17	964871	AF205588	19564	1-273
HBCAR79	19	573989	AC021215	19565	1-432
HBCAT17	21	503573	AC011448	19566	1-874
HBCAT17	21	503573	AC011448	19567	1-749
HBCAT63	22	573993	AL133243	19568	1-236
HBCAT63	22	573993	AL133243	19569	1-364
HBCAT63	22	573993	AL133243	19570	1-141
HBCBX12	24	861018	AC068475	19571	1-70 163-330 651-994 1105-1272 1372-1586 2253-2908 2995-3524 3711-4406 4418-4480 4581-5218 5621-5829 6007-6286
HBCBX12	24	861018	AC005954	19572	1-91 893-1009 1323-1695 1856-2422 3548-3650 3665-4010 4965-5170 5288-5397 6874-7000 7283-7430 7520-7600 7693-7860 8181-8524 8634-8807 8902-9116

					9783-10438 10525-11054 11241-11936 11948-12010 12111-12748 13154-13362 13540-13833 14748-14851 14928-15142 15543-15616 17091-17240 17351-18020 18331-18662 19524-19871 19999-20209 20570-20670 20861-21075 22489-22727 22961-23073 25307-25360 29573-29961 31051-31168
HBCBX12	24	861018	AC005954	19573	1-131
HBDAC79	26	935414	AP001785	19574	1-99 368-765 963-1141 1966-2078 2175-2597 3058-3200 3479-3686 4113-4631 4727-5095 5187-5344 5973-6073 6176-7972 8126-9308
HBDAC79	26	935414	AP001785	19575	1-224
HBDAC79	26	935414	AP001785	19576	1-428
HBDAD04	27	614849	AC055822	19577	1-970
HBDAD04	27	614849	AC055822	19578	1-424
HBDAD04	27	614849	AC055822	19579	1-281
HBDADF51	28	725481	AC041031	19580	1-709
HBDADF51	28	725481	AC012314	19581	1-859 928-1588 2180-2459 2554-2831 2984-3375 3783-4571 4867-5280 5713-7103
HBDADF51	28	725481	AC010492	19582	1-859 928-1588 2180-2459 2553-2830 2983-3374 3782-4570 4866-5279

					5712-7102
HBDAF51	28	725481	AC012314	19583	1-428
HBDAF51	28	725481	AC010492	19584	1-428
HBDAF61	29	864338	AC003963	19585	1-1249
HBDAF61	29	864338	AC003963	19586	1-582
HBDAF61	29	864338	AC003963	19587	1-106
HBJAB59	30	557972	AC073349	19588	1-596
HBJAB59	30	557972	AC073349	19589	1-107
HBJAB59	30	557972	AC073349	19590	1-608
HBJAC23	31	529753	AC008013	19591	1-37 103-661 1556-1903 1956-2579 2645-3136 3489-3537 4511-4666 5208-5598 5932-6495 6523-7338 8399-8495 9972-10388 10578-11240 11254-11411 11711-11799 12318-12567 13065-13804 13950-14573 15144-15404 16572-16810 17843-17999 18506-18812 18839-19318 20897-21290 21743-22162 22280-23030
HBJAC23	31	529753	AC006432	19592	1-151 694-1084 1418-1981 2009-2823 3503-3599 5071-5487 5677-6339 6355-6510 6809-6897 7416-7665 8157-8919 9065-9688 10259-10519 11692-11930 12638-12770 12941-13097 13610-13902 13943-14422 15994-16388 16841-17233 17379-18129
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HDQ HP44	1942	811790	AC034259	23859	1-93 169-689 881-2081 2249-3269
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HDQ HZ22	1946	879416	AL158048	23864	1-730 1351-1559 1659-2178
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HDTBF27	1957	683389	AC005021	23883	1-1198
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HDTBL45	1958	785534	AL159163	23885	1-62 3028-3159 3731-4202 5811-5871 6104-6243 6700-6969 7128-7415 7633-9533 10360-10492 11492-11681 12072-12484 13542-14028 14071-14553 18412-18511 18529-19185 20422-21507 22310-22692 22758-22889
HDTBL45	1958	785534	AL159163	23886	1-869
HDTBQ34	1963	703446	AL359539	23887	1-450
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HBCAT10	9539	968195	AL357521	42490	1-689
HBCAT10	9539	968195	AL357521	42491	1-355
HBCAT10	9539	968195	AL021528	42492	1-689
HBCAT10	9539	968195	AL021528	42493	1-355

HBCAS32	9540	699489	AC007101	42494	1-215 867-1214 1226-2260 2359-2415
HBCAQ85	9541	783431	AC019071	42495	1-831 1116-1365 1600-1920 2161-2334 2902-3156 3364-3836 4074-4278 4306-4417 4485-4581 4693-4853 4995-5264 5758-5863 6411-6509 6551-6922
HBCAQ85	9541	783431	AC019071	42496	1-412
HASCG58	9543	738423	AC011116	42497	1-869
HASCG58	9543	738423	AC078794	42498	1-870
HASCG58	9543	738423	AC011116	42499	1-971
HASCG58	9543	738423	AC078794	42500	1-623
HASCG58	9543	738423	AC011116	42501	1-623
HASAW90	9544	789112	AC010234	42502	1-2931
HASAW90	9544	789112	AC021464	42503	1-58 332-547 909-1209 2280-2634 3445-3539 4477-4620 7577-10496 12087-13447 13462-15091 15142-16137
HASAW90	9544	789112	AC021464	42504	1-506
HASAC10	9546	968746	AC007677	42505	1-477
HASAC10	9546	968746	AC007677	42506	1-1410

[052] Table 1B summarizes additional polynucleotides encompassed by the invention (including cDNA clones related to the sequences (Clone ID NO:Z), contig sequences (contig identifier (Contig ID:) contig nucleotide sequence identifiers (SEQ ID NO:X)), and genomic sequences (SEQ ID NO:B). The first column provides a unique clone identifier, "Clone ID NO:Z", for a cDNA clone related to each contig sequence. The second column provides the sequence identifier, "SEQ ID NO:X", for each contig sequence. The third column provides a unique contig identifier, "Contig ID:" for each contig sequence. The fourth column, provides a BAC identifier "BAC ID NO:A" for the BAC clone referenced in the corresponding row of the table. The fifth column provides the nucleotide sequence identifier, "SEQ ID NO:B" for a fragment of the BAC clone identified in column four of the corresponding row of the table. The sixth column, "Exon From-To", provides the location (i.e., nucleotide position numbers) within the polynucleotide sequence of SEQ ID NO:B which delineate certain polynucleotides of the invention that are also exemplary members of polynucleotide sequences that encode polypeptides of the invention (e.g., polypeptides containing amino acid sequences encoded by the polynucleotide sequences delineated in column six, and fragments and variants thereof).

**TABLE 2**

Clone ID NO:Z	Contig ID:	SEQ ID NO:X	Analysis Method	PFam/NR Description	PFam/NR Accession Number	Score/ Percent Identity	NT From	NT To
HAMHB21	961376	11	HMMER 2.1.1	PFAM: RhoGAP domain	PF00620	100	497	916
HBDAC79	935414	26	HMMER 2.1.1 blastx.14	PFAM: Acyl-CoA dehydrogenase (AL021958) fadE9 [Mycobacterium tuberculosis]	PF00441 gi 2911026[emb]CAA 17519.1]	102.6 62% 51% 64% 35%	94 250 348 6	342 235 384 422 89
HBJAG72	722723	32	HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF00099	2.32	83	115
HBJGT92	919507	107	HMMER 1.8	PFAM: Bacterial mutT protein	PF00293	7.68	377	436
HBJJY20	669519	141	HMMER 2.1.1	PFAM: Om/Lys/Arg decarboxylase	PF01276	53.1	49	162
HBMBU24	677240	234	HMMER 1.8	PFAM: Core histones H2A, H2B, H3 and H4	PF00125	7.72	139	192
HBMBZ71	880580	238	HMMER 1.8	PFAM: von Willebrand factor type D domain	PF00094	26.52	200	526
HBMDC16	888206	258	blastx.2	Butyrophilin-like protein BUTR-1.	sp AAF72554 AAF72 554	50%	19	315
HBMUO90	928078	294	blastx.14	Zfp61p [Mus musculus]	gi 887887 gb AAC52 290.1]	84% 53%	24 154	119 243
HBMXE31	573323	317	HMMER 1.8	PFAM: Gonadotropin- releasing hormones	PF00446	10.78	112	141
HCFCF47	894415	372	HMMER 1.8	PFAM: Eukaryotic protein kinase domain	PF00069	89.54	20	295
HCFCJ21	671028	374	HMMER	PFAM: Core histones	PF00125	12.79	123	188

HCFL95	945122	391	1.8 blastx.14	H2A, H2B, H3 and H4 p34 protein [Rattus sp.]	gi 534876 dbj BAA02786.1	81% 100% 85%	126 236 71	191 271 91
HCUAL07	953876	449	blastx.14	(AF079098) arginine- tRNA-protein transferase 1-1p; ATE1-1p [Homo sapiens]	gi 3806094 gb AAD12366.1	87%	5	97
HCUB11	967484	478	blastx.14	Ps 2=basic proline-rich protein(PRB1L precursor 1 1 [Homo sapiens])	gi 386433 gb AAB27289.1	37% 53% 35% 40% 28% 40% 36% 36% 41% 41% 32% 33% 36% 71% 71% 35%	158 62 325 133 158 133 225 225 74 74 325 158 158 183 44 44 74	63 24 242 59 63 59 160 160 24 24 242 87 93 118 24 24 24
HCUDT65	915742	548	HMMER 2.1.1 blastx.14	PFAM: tRNA synthetases class II (A) ORF YNL040w [Saccharomyces cerevisiae]	PF01411	35.1	697	930
					gi 1301892 emb CAA95907.1	42% 52% 31% 42%	763 658 1153 1678	972 759 1293 1740

HCUEU10	964857	595	HMMER 1.8	PFAM: Bacterial regulatory proteins, luxR family	PF00196	21% 20% 5.43	1009 1273 13	1149 1494 42
HCUGB48	880730	647	HMMER 1.8	PFAM: TNFR/NGFR cysteine-rich region	PF00020	7.99	173	226
HCUGR38	706471	670	HMMER 1.8	PFAM: Alcohol/other dehydrogenases, short chain type	PF00106	73.02	102	284
HCUHM44	615198	702	HMMER 1.8	PFAM: HMG (high mobility group) box	PF00505	4.81	2	73
HCWAK80	702435	748	HMMER 1.8	PFAM: Src homology domain 3	PF00018	3.55	316	387
HCWAR05	932623	759	blastx.14	hypothetical protein [Synecocystis sp.]	gi 1653272 dbj BAA1 8187.1	47% 46% 71%	235 70 321	83 32 301
HCWBB63	667283	782	HMMER 2.1.1	PFAM: Secretory protein of YscJ/FliF family	PF01514	78.2	45	275
HCWBE76	968515	799	HMMER 1.8	PFAM: Helix-loop-helix DNA-binding domain	PF00010	9.77	13	51
HCWBI37	967717	809	blastx.14	URF (pot. 4.5S protein) [Escherichia coli]	gi 42759 emb CAA25 537.1	63% 85% 60%	9 202 228	179 222 257
HCWBI53	934909	810	blastx.14	lepA [Mycobacterium tuberculosis]	gi 165365 emb CAB 03723.1	85% 84%	65 9	166 65
HCWBI90	921653	812	blastx.14	xylose isomerase [Klebsiella pneumoniae]	gi 43952 emb CAA43 389.1	59% 55%	316 344	8 291
HCWBN06	924638	825	blastx.14	collagen type XVII [Mus musculus]	gi 309183 gb AAA37 443.1	26% 46%	153 262	266 306



HCWBQ03	920886	834	blastx.14	ORF YBR208c [Saccharomyces cerevisiae]	gi 536588 emb CAA85172.1	57%	5	46
HCWCM65	529230	891	HMMER 1.8	PFAM: AMP-binding enzymes	PF00501	36%	75	140
HCWCR31	693632	909	HMMER 2.1.1	PFAM: ATP synthase (E/31 kDa) subunit	PF01991	46%	259	303
HCWDI64	924632	945	blastx.14	tetracycline transporter-like protein [Mus musculus]	gi 2506078 dbj BAA22622.1	43%	310	357
HCWDJ23	527555	952	HMMER 2.1.1	PFAM: Bacterial extracellular solute-binding proteins, family 3	PF00497	75%	337	360
HCWDL45	889416	957	HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF00099	42%	147	287
HCWDR01	839104	973	HMMER 1.8	PFAM: ABC transporters	PF00005	54%	3	74
HCWDV17	974478	993	HMMER 1.8	(AE000411) putative ATP-binding component of a transport system [Escherichia coli]	gb AAC76377.1	69%	9	215
HCWDX22	967361	1014	blastx.14	PFAM: Bacterial regulatory proteins, luxR family	PF00196	44%	18	200
				copC peptide	gi 151190 gb AAA25	51%	391	477
						81.59	416	613
						79%	365	84

HCWDX76	932614	1019		blastx.14	[Pseudomonas syringae] (AF102543) unknown [Zymomonas mobilis]	808.1  gi 4378174 gb AAD19419.1	81%	423	358
HCWED61	971865	1041		blastx.14	gp210 (AA 1-1886) [Rattus norvegicus]	gi 56463 emb CAA68759.1	75%	481	212
HCWEG69	948693	1058		HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF00099	2.79	57	98
HCWEI19	948690	1066		HMMER 1.8	orf3 [Pseudomonas aeruginosa]	gi 557259 emb CAA57572.1	55% 87%	248 56	45 9
				blastx.14	PFAM: Zinc-binding metalloprotease domain	PF00099	8.6	226	273
				blastx.14	formaldehyde dehydrogenase (glutathione) [Escherichia coli]	gi 887431 emb CAA52057.1	75%	300	10
HCWEL01	916972	1086		blastx.14	(AF010496) exonuclease SbcD homolog [Rhodobacter capsulatus]	gi 3128267 gb AAC16119.1	39% 47%	34 193	171 249
HCWEM51	920887	1096		blastx.14	argininosuccinate lyase [Bacillus subtilis]	gi 2635409 emb CAB14904.1	54% 47%	365 57	39 7
HCWEQ14	908245	1105		HMMER 1.8	PFAM: DEAD and DEAH box helicases	PF00270	72.08	37	177
				blastx.14	(AC002985) R27090_2 [Homo sapiens]	gi 2443870 gb AAB81544.1	100% 66%	37 5	177 40
HCWEW45	571355	1116		HMMER 1.8	PFAM: Heat shock hsp90 proteins	PF00183	10.32	37	186
HCWEY34	954142	1125		blastx.14	(AJ000758) precorrin-4 methylase [Bacillus megaterium]	gi 3724045 emb CAA04314.1	32%	3	242

HCWFF88	506577	1143	HMMER 1.8	PFAM: Src homology domain 3	PF00018	4.92	140	181
HCWFK57	861907	1149	HMMER 2.1.1	PFAM: RNA polymerase beta subunit	PF00562	36.2	34	270
HCWFT29	690751	1186	HMMER 1.8	PFAM: Helicases conserved C-terminal domain	PF00271	4.51	105	152
HCWUFU66	853005	1196	HMMER 2.1.1	PFAM: Aldehyde dehydrogenase family	PF00171	71.4	105	269
HCWGB78	861843	1217	HMMER 2.1.1	PFAM: Ribosomal protein L31	PF01197	50.8	126	236
HCWGE12	967067	1223	HMMER 1.8	PFAM: Bacterial mutT protein	PF00293	4.04	214	288
HCWGW12	964088	1262	blastx.14	L-lactate dehydrogenase (EC 1.1.1.27) - Acinetobacter 1	pir A37334 A37334	73%	137	60
HCWGY90	960159	1288	HMMER 1.8	PFAM: Bacterial regulatory helix-loop- helix proteins, araC family	PF00165	58.7	6	137
HCWHB12	970688	1295	blastx.14	operon regulatory protein [Erwinia carotovora]	gi 148382 gb AAA24 811.1	86%	6	158
HCWHD07	953384	1305	blastx.14	Nodulation protein V (EC 2.7.3.-), [Escherichia coli]	gi 1736771 dbj BAA1 5920.1	47% 33% 85%	195 59 310	314 211 330
HCWHP74	598510	1334	blastx.14	Isp42p [Saccharomyces cerevisiae]	gi 736300 emb CAA8 8644.1	41% 46% 50%	56 298 341	301 393 394
			HMMER 1.8	PFAM: Phorbol esters / diacylglycerol binding domain	PF00130	2.09	68	112

HCWHQ03	924187	1336	blastx.14	(AL049608) extensin-like protein [Arabidopsis thaliana]	gi 4584539 emb CAB40769.1	50%	85	14
						45%	271	206
						35%	209	126
						43%	300	253
						46%	291	247
						85%	238	218
HCWHQ31	574945	1337	HMMER 2.1.1	PFAM: Carbon-nitrogen hydrolase	PF00795	39.4	141	308
HCWHR81	935419	1343	HMMER 2.1.1	PFAM: Ribosomal protein L30p/L7e	PF00327	90.5	107	265
HCWHT59	924105	1349	blastx.14	(AF047828) syringomycin synthetase [Pseudomonas syringae pv. syringae]	gi 3510629 gb AAC80285.1	57%	261	148
						45%	327	148
						50%	261	148
						50%	261	148
						36%	122	9
						34%	122	9
						61%	329	252
						55%	157	104
						40%	104	9
						33%	107	9
						66%	142	107
						55%	305	252
						26%	249	160
						26%	249	160
						44%	305	252
						41%	157	107
						41%	157	107
						33%	311	249
						22%	107	15
						32%	246	163
HCWKFO8	959388	1388	blastx.14	pot. ORF 1 [Homo	gi 1335196 emb CAA	57%	83	27

				sapiens]	26917.1]	62%	303	256
HCWKN08	959380	1409	blastx.14	Ceob [Burkholderia cepacia]	gi 2109271 gb AAB58161.1]	32% 47%	192 247	82 179
HCWKV68	959801	1427	blastx.14	(AL121600) hypothetical protein SCF76.09 1	gi 6002364 emb CAB56729.1]	55% 50% 62% 54%	249 148 281 61	169 83 258 29
HCWLD06	935392	1437	blastx.14	ORF_0485 [Escherichia coli]	gi 887832 gb AAA83063.1]	34% 42% 57%	219 120 238	142 43 218
HCWLE37	960093	1442	blastx.14	(AF039571) peripheral benzodiazepine receptor interacting protein; PBR-IP/PRAX1 [Homo sapiens]	gi 4104812 gb AAD11957.1]	47% 42% 35%	240 449 66	7 282 7
HCWLH79	959458	1453	blastx.14	(AC004877) sco-spondin-mucin-like; similar to P98167 1 sapiens]	gi 3638957 gb AAC36301.1]	100% 85% 87% 44% 36%	126 304 103 66 250	263 345 126 119 315
HCWTB11	965024	1462	blastx.14	DNA primase [Escherichia coli]	gi 147755 gb AA24600.1]	27% 71%	289 326	191 306
HCWTB56	853009	1470	HMMER 1.8	PFAM: EI-E2 ATPases	PF00122	45% 55.15	341 2	3 301
			blastx.2	cadmium resistance protein [Lactococcus lactis]	gb AAB37345.1]	42%	2	316
HCWTR08	958791	1516	blastx.14	(AE000888) malate dehydrogenase [Methanobacterium]	gi 2622314 gb AAB85694.1]	43% 44%	66 182	134 262

HCWTR54	729290	1517	HMMER 1.8	thermoautotrophicum] PFAM: Helicases conserved C-terminal domain	PF00271	6.14	151	198
HCWTS15	654317	1519	HMMER 1.8	PFAM: D-isomer specific 2-hydroxyacid dehydrogenases	PF00389	47.52	2	166
HCWUU16	661570	1593	HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF00099	2.17	33	77
HDDMA83	926991	1633	blastx.14	(AF038963) RNA helicase [Homo sapiens]	gi 4405795 gb AAD1 9826.1	100% 51% 100%	2 537 656	514 635 694
HDMAQ15	941282	1646	HMMER 2.1.1	PFAM: POT family	PF00854	77.2	811	386
			blastx.2	(AF121080) cAMP inducible 1 protein [Mus musculus]	gb AAD24570.1 AF1 21080_1	80%	2	997
HDPAG32	947832	1655	HMMER 2.1.1	PFAM: Peptidase family M1	PF01433	39.1	335	577
HDPNC94	794275	1678	HMMER 2.1.1	PFAM: RhoGEF domain	PF00621	54.2	363	740
HDPF07	974494	1694	blastx.14	(AF151363) Cdc42 GTPase-activating protein [Mus musculus]	gi 5020264 gb AAD3 8043.1 AF151363_1	92% 96% 50%	513 715 458	716 789 505
HDPIT53	926498	1736	blastx.14	(AF109719) BAT2 [Mus musculus]	gi 3941737 gb AAC8 2480.1	50% 30%	229 278	170 219
HDPIT61	741724	1737	blastx.2	(AF121080) cAMP inducible 1 protein [Mus musculus]	gb AAD24570.1 AF1 21080_1	73% 57%	48 293	329 397

HDPKD52	959653	1750	HMMER 1.8	PFAM: Fibronectin type III domain	PF00041	4.82	340	402
HDPLC45	909091	1755	HMMER 2.1.1	PFAM: BTB/POZ domain	PF00651	39.5	280	507
HDPMA48	582015	1775	blastx.2	(AF038007) FIC1 [Homo sapiens]	gb AAC63461.1	54%	152	703
HDPMO62	912722	1780	HMMER 1.8	PFAM: Ras family (contains ATP/GTP binding P-loop)	PF00071	132.39	127	432
			blastx.2	rab-related GTP-binding protein [Homo sapiens]	emb CAA68227.1	54% 57%	133 20	444 76
HDPNC96	934520	1788	HMMER 1.8	PFAM: Eukaryotic protein kinase domain	PF00069	206.63	3	734
			blastx.14	HUMAN NDR [unidentified]	gi 2304746 emb CAA 03387.1	92%	3	734
HDPOL93	792193	1797	HMMER 1.8	PFAM: EF hand	PF00036	7.78	266	313
HDPPOP24	812091	1815	HMMER 2.1.1	PFAM: Fes/CIP4 homology domain	PF00611	22.4	151	387
HDPPO44	951276	1818	HMMER 1.8	PFAM: Lectin C-type domain short and long forms	PF00059	37.49	245	376
HDPRH02	919404	1837	blastx.14	ORF YGR090w [Saccharomyces cerevisiae]	gi 123133 emb CAA 97093.1	30% 48%	266 593	451 673
HDPHSG10	961323	1849	blastx.14	reverse transcriptase [Homo sapiens]	gi 439877 gb AA02 291.1	66% 37% 54%	6 280 235	59 351 267
HDPITW90	722699	1868	HMMER 1.8	PFAM: IG (immunoglobulin)	PF00047	3.32	1	24

HDPVG11	966556	1877	HMMER 1.8	superfamily PFAM: PH (pleckstrin homology) domain	PF00169	16	518	613
HDPWE80	909916	1890	HMMER 2.1.1 blastx.2	PFAM: PH domain (AF102854) membrane- associated guanylate kinase-interacting protein 2 Maguin-2 [Rattus norvegicus]	PF00169 gb AAD04568.1	81.2 36%	412 349	708 756
HDPWY46	915964	1894	blastx.14	(AF061738) leucine aminopeptidase [Homo sapiens]	gi 433594 gb AAD1 7527.1	94% 87% 80% 95% 62% 33%	3 316 140 254 425 305	152 438 217 316 472 358
HDQEF04	927024	1914	blastx.14	Bassoon [Mus musculus]	gi 3413810 emb CAA 76598.1	75%	239	216
HDQGT70	909848	1936	blastx.14	Bat2 [Homo sapiens]	gi 29375 emb CAA78 744.1	37%	248	201
HDQHT10	963481	1944	blastx.14	(AF039571) peripheral benzodiazepine receptor interacting protein; PBR- IP/PRAX1 [Homo sapiens]	gi 4104812 gb AAD1 1957.1	58% 43% 100% 55% 42% 58% 83%	490 387 76 253 227 256 45 51	455 319 59 227 215 10 34
HDQHZ10	961336	1945	blastx.14	fractionated X-irradiation- induced 29 thymoma [Mus musculus]	gi 1389694 gb AAB0 2905.1	51% 71%	47 2	256 43
HDQHZ22	879416	1946	blastx.2	cysteine rich hair keratin	emb CAA56339.1	40%	65	319



HD1AY23	973925	1956	blastx.14	associated protein [Oryctolagus cuniculus] (AF086624) serine threonine kinase [Rattus norvegicus]	gi 3800869 gb AAC6 8900.1	42%	65	352
HD1AY23	974565	9561	blastx.14	(AF086624) serine threonine kinase [Rattus norvegicus]	gi 3800869 gb AAC6 8900.1	98%	78	254
HD1BO48	945083	1959	HMMER 1.8	PFAM: IG (immunoglobulin) superfamily	PF00047	98% 85% 100% 66%	79 330 371 305	255 371 403 331
HD1BR50	846630	1968	blastx HMMER 1.8	(AJ009698) embigin protein [Rattus norvegicus]	emb CAA08796.1	58% 75% 58%	132 273 357	248 356 464
HD1BY88	934472	1973	blastx.14 HMMER 2.1.1	PFAM: Thioredoxins	PF00085	29.85	163	297
HD1DC53	916348	1977	blastx.14 HMMER 1.8	PFAM: Eukaryotic protein kinase domain	PF00069	93.6	3	302
HD1TE119	912765	1984	blastx.14	p50 KKLAMRE protein kinase [Homo sapiens]	gi 1517820 gb AAC5 0918.1	82% 35% 100%	3 192 492	170 458 509
HD1TES50	964709	1987	HMMER 1.8	PFAM: Core histones H2A, H2B, H3 and H4 rab4b [Canis familiaris]	PF00125	7.98	180	233
				PFAM: RNA recognition motif. (aka RRM, RBD, or RNP domain)	gi 919 emb CAA3980 0.1	78% 88%	244 387	354 413
			blastx.2	arginine-rich nuclear	gb AAA35554.1	31.58	108	326
						65%	36	350

HDTHQ15	923899	2009	blastx.14	protein [Homo sapiens] Similar to a C.elegans protein encoded in cosmid C27F2 (U40419) [Homo sapiens]	gi 1665781 dbj BAA1 3387.1	97%	4	612
HDTHZ46	957669	2012	blastx.14	(AC004877) sco-spondin- mucin-like; similar to P98167.1 sapiens]	gi 3638957 gb AAC3 6301.1	43% 42% 46% 43% 40% 38%	100 45 172 2 5 318	168 101 216 49 49 371
HDTHD61	908946	2016	HMMER 1.8 blastx.2	PFAM: Zinc finger, C2H2 type (AK002053) unnamed protein product [Homo sapiens]	PF000096  dbj BAA92059.1	7.07  46% 53% 50% 45% 47% 49% 46% 33% 42% 34% 51% 57% 37% 32% 50% 47% 66%	407  45 45 33 45 45 48 45 18 18 60 18 347 347 338 374 338 519	430  389 341 341 389 344 356 344 674 320 554 245 547 553 457 442 554
HDTHF01	883070	2017	blastx.2	(AF010144) neuronal	gb AAC08737.1	61%	315	524

HDTIZ44	925574	2032	blastx.14	procollagen alpha 2(V) [Homo sapiens]	thread protein AD7c-NTP [Homo sapiens]	gi 2370202 emb CAA75002.1		61%	309	509
								65%	361	507
								62%	34	162
								60%	53	172
								41%	304	507
								35%	286	507
								40%	327	473
								50%	50	151
								57%	89	166
								47%	109	171
								37%	308	379
								52%	128	178
								43%	77	9
HDTIJ37	799834	2036	HMMER 1.8	PFAM: Laminin B (Domain IV)		PF00052		40%	89	9
								37%	89	9
								57%	229	188
								47%	183	133
								60%	135	106
								47%	328	278
								75%	165	142
								60%	121	92
								43%	139	92
								54%	165	133
								60%	162	133
								54%	226	194
								2.02	386	466
HDTIJ02	913787	2037	HMMER 1.8	PFAM: Phorbol esters / diacylglycerol binding domain		PF00130		5.7	21	68
HDTKQ14	886936	2044	HMMER	PFAM: Src homology		PF00018		12.87	430	546

HDTLD17	908601	2052	1.8 blastx.2	domain 3 (AL049683) hypothetical protein [Homo sapiens] PFAM: Zinc finger, C2H2 type	emb CAB41255.1	100%	439	555
			HMMER 2.1.1	PFAM: Zinc finger, C2H2 type	PF00096	56%	76	291
HDTLD17	908601	2052	blastx.2	Zfp-29 [Mus musculus]	emb CAA38920.1	96.3	154	222
						48%	49	636
						65%	49	399
						66%	49	399
						66%	70	399
						65%	49	411
						62%	49	369
						64%	70	381
						47%	115	636
						58%	49	324
						42%	372	641
						50%	375	569
						47%	375	569
						47%	375	569
						48%	372	569
						43%	372	578
						42%	372	602
						46%	375	569
						35%	279	569
						43%	372	569
						43%	375	569
						46%	375	569
						63%	547	636
						63%	547	636
						52%	538	651
						56%	547	642
						35%	375	491

HEOMG48	963338	2091	blastx.14	very large tegument protein [human herpesvirus 2]	gi 1869859 emb CAB06722.1	66%	641	667
						63%	460	428
						50%	338	303
						33%	290	228
						38%	154	92
						50%	82	41
						29%	219	148
HEOMG78	920911	2092	blastx.14	contains similarity to C2 domains [Caenorhabditis elegans]	gi 1825586 gb AAB42222.1	70%	294	437
						40%	136	246
HEOMS08	959581	2113	blastx.14	(AF034970) docking protein [Homo sapiens]	gi 3043919 gb AAC13265.1	93%	129	173
HEOMT79	936687	2118	blastx.14	(AF108420) 1-aminocyclopropane-carboxylate synthase [Fugu rubripes]	gi 4426837 gb AAD20564.1	83%	172	207
						52%	10	210
HEOMU79	965900	2121	blastx.14	HLA-B-associated transcript 2 (BAT2) [Homo sapiens]	gi 179339 gb AAA35585.1	29%	320	198
HEOMX92	919200	2131	blastx.14	TGR-CL5bis [Homo sapiens]	gi 1247469 emb CAA01862.1	53%	274	230
						38%	129	91
						53%	271	233
						30%	44	6
HEOMX92	961148	9562	blastx.14	retrovirus-related reverse transcriptase pseudogene - slow loris	pir B25313 GNLRL1	27%	206	174
						46%	44	241
						50%	247	312
HEONQ19	930705	2142	HMMER 2.1.1	PFAM: PH domain	PF00169	42.5	213	533
			blastx.2	(AJ250425) Collybistin I [Rattus norvegicus]	emb CAB65966.1	96%	9	629

HEONV59	949152	2148	blastx.2	(AK001463) unnamed protein product [Homo sapiens]	dbj BAA91707.1	51% 50%	163 284	279 379
HEOPE58	851009	2157	HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF00099	5.32	320	364
HEOPO08	938184	2174	blastx.14	alpha-1 type II collagen [Xenopus laevis]	gi 214044 gb AAA49679.1	38% 32% 31% 75% 36%	142 429 429 273 208	11 346 334 250 134
HEOQC76	909032	2189	HMMER 2.1.1	PFAM: Zinc finger, C2H2 type	PF00096	86.9	169	237
			blastx.2	(AK001753) unnamed protein product [Homo sapiens]	dbj BAA91884.1	37% 33% 35% 52% 29%	139 139 139 154 196	609 609 480 306 582
HEOQP44	942596	2203	HMMER 2.1.1	PFAM: Beta-lactamase	PF00144	420.7	250	1026
HEOQS11	965930	2204	blastx.14	ORF1A [Homo sapiens]	gi 475909 emb CAA47472.1	51%	30	152
HEORE79	959572	2214	blastx.14	rehydrin [Tortula ruralis]	gi 1732471 gb AAB49656.1	53% 46% 50% 50% 55% 55% 42% 62% 62%	101 101 232 284 58 180 223 58 180	145 145 267 325 84 206 264 81 203 325

HHECO01	915285	2250	blastx.14	(AF039691) antigen NY-CO-9 [Homo sapiens]	gi 3170182 gb AAC18040.1	65%	302	174
HHEEC07	952455	2267	blastx.14	(AF064257) Dhml-like protein [Homo sapiens]	gi 5881961 gb AAD55138.1 AF064257.1	100%	25	2
HHEHU73	923895	2279	HMMER 1.8	PFAM: Phorbol esters / diacylglycerol binding domain	PF00130	99%	1202	1801
						100%	1862	1912
HHEJH30	961974	2282	blastx.14	(AF180920) cyclin ania-6a [Homo sapiens]	gi 5823554 gb AAD53184.1 AF180920.1	4.1	115	156
HHEND45	919630	2302	HMMER 1.8	PFAM: Double-stranded RNA binding motif	PF00035			
			blastx.14	[D.melanogaster mRNA, complete cds.], gene product [Drosophila melanogaster]	gi 158506 gb AAA73062.1	12.86	25	114
HHEQK01	871911	2346	HMMER 1.8	PFAM: Phorbol esters / diacylglycerol binding domain	PF00130	52%	1	114
						47%	235	297
HHEQV39	932851	2354	HMMER 1.8	PFAM: Src homology domain 3	PF00018		64	90
HHESU85	783820	2381	HMMER 1.8	PFAM: Heat shock hsp90 proteins	PF00183	30.41	526	708
HHETQ54	908567	2392	HMMER 2.1.1	PFAM: KRAB box	PF01352	11.81	88	288
			blastx.14	NK10 [Mus musculus]		166.4	233	421
HHEUA62	965709	2400	HMMER 1.8	PFAM: Spectrin alpha chain, repeated domain	gi 506502 emb CAA56225.1	89%	212	448
			blastx.14	(AB023622) Septin6 [Mus musculus]	PF00435	10.48	103	186
					gi 5689158 dbj BAA82838.1	59%	13	144
						60%	211	315

HHEUC31	795268	2401	HMMER 2.1.1	PFAM: Ank repeat	PF000023	31.5	3	92
HKBAT27	963724	2486	HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF000099	2.17	11	37
HLMBW11	950728	2526	blastx.14	(AF156884) RIP-like kinase [Homo sapiens]	gi 5059425 gb AAD3 9005.1 AF156884.1	92%	129	782
HLMBY16	531053	2529	HMMER 1.8	PFAM: Phorbol esters / diacylglycerol binding domain	PF00130	1.99	82	123
HLMDU71	531228	2572	HMMER 2.1.1	PFAM: Phosphate- binding protein	PF01449	48.1	1	123
HLMFU09	909666	2600	blastx.14	(AF151363) Cdc42 GTPase-activating protein [Mus musculus]	gi 5020264 gb AAD3 8043.1 AF151363.1	78%	277	372
HLMHP67	967636	2633	blastx.14	Hypothetical bacteriophage n4 receptor protein NfrA precursor. [Escherichia coli]	gi 1651236 dbj BAA3 5202.1	82% 100%	107 3	340 104
HLMHT94	531054	2641	HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF000099	2.86	264	284
HLMIX95	960056	2679	blastx.14	(AB008430) CDEP [Homo sapiens]	gi 2766165 dbj BAA2 4267.1	89% 69%	440 47	330 9
HLMMA52	920292	2694	blastx.14	ORF-3 protein [Pseudorabies virus]	gi 334072 gb AAA47 471.1	43% 100% 70%	115 165 174	162 176 203
HLMMD05	932127	2697	blastx.14	collagen [Ascaris suum]	gi 159657 gb AAA29 371.1	50% 61% 44% 58% 63% 50%	189 355 189 107 349 387	124 317 115 72 317 352



HLMMV66	926188	2733	HMMER 1.8 blastx.14	PFAM: Ank repeat similar to HUMORFU (D26069) [Homo sapiens]				42%	358	317
								50%	407	366
								46%	355	317
								46%	110	66
								32%	189	115
								46%	355	317
								17.86	245	322
								62%	230	382
								81%	337	384
								86%	404	448
								71%	378	419
								39%	173	256
								43%	99	146
HLMNL55	964739	2769	blastx.14	dynein heavy chain isotype 6 [Tripneustes gratilla]			gi 687206 gb AAA63 589.1	70%	19	138
								37%	184	231
HLMNN02	920296	2776	blastx.14	(AF083501) latent nuclear antigen [Macaca mulatta rhadinovirus 17577]			gi 4494984 gb AAD2 1406.1	36%	345	289
								53%	191	153
								50%	86	57
								33%	306	208
HL YAA41	909874	2871	HMMER 2.1.1	PFAM: PH domain			PF00169	37.3	162	260
HL YDL60	909866	2980	blastx.14	ORF-3 protein [Pseudorabies virus]			gi 334072 gb AAA47 471.1	44%	89	15
								37%	229	158
								35%	376	293
								30%	259	191
								39%	283	215
								75%	179	156
								47%	232	182
								75%	26	3

HL YDS11	966732	2986	blastx.14	orfIV [Borna disease virus]		gi 473842 gb AAA20666.1	38%	250	197
HL YDT68	526245	2991	HMMER 1.8	PFAM: Zinc finger, C2H2 type		PF000096	39%	200	161
HL YDV62	927872	2993	HMMER 2.1.1	PFAM: PH domain		PF00169	4.11	89	124
			blastx.2	(AC005490) unknown protein [Arabidopsis thaliana]		gb AAC35236.1	58.6	188	406
HL YEN93	682176	3005	HMMER 1.8	PFAM: Phorbol esters / diacylglycerol binding domain		PF00130	41% 38%	113 451	292 504
HL YGP46	832311	3042	HMMER 2.1.1	PFAM: IQ calmodulin-binding motif		PF00612	24.4	12	74
HL YHN67	920551	3056	blastx.14	EDTP(egg derived tyrosine phosphatase).		sp BAA33720 BAA33720	65% 47%	1 264	234 314
HMAAF10	968199	3062	blastx.14	Formate c-acetyltransferase (EC 2.3.1.54). [Escherichia coli]		gi 1651427 dbj BAA35638.1	100% 76%	1 347	300 385
HMABJ56	907640	3063	HMMER 2.1.1	PFAM: ADP-riboseylation factor family		PF00025	24.8	157	231
			blastx.14	(AF082517) ADP-riboseylation factor [Entamoeba histolytica]		gi 3746799 gb AAC64063.1	39% 56% 61%	281 154 233	403 228 271
HMABQ71	729831	3065	HMMER 2.1.1	PFAM: DNA topoisomerase II (N-terminal region)		PF00204	128.8	210	407

HMAADC02	920088	3067	blastx.14	ORF_f418 [Escherichia coli]	gi 536985 gb AAA97040.1	95%	202	143
HMAZ55	939916	3071	blastx.2	(AK002022) unnamed protein product [Homo sapiens]	dbj BAA92041.1	98%	270	728
HMAFY42	778521	3078	HMMER 2.1.1	PFAM: WH1 domain	PF00568	90	46	303
HMAKG69	723186	3080	HMMER 1.8	PFAM: Signal C terminal domain	PF00512	40.87	31	405
HMAIC22	947905	3085	HMMER 2.1.1	PFAM: Peptidase family M3	PF01432	65.9	115	402
			blastx.14	CG Site No. 18031 [Escherichia coli]	gi 466635 gb AAB18474.1	84% 100% 55%	112 2 363	390 112 422
HMAKA11	966282	9569	blastx.14	MaoB [Escherichia coli]	gi 1480003 dbj BAA11058.1	99% 90% 50%	1516 1673 1587	803 1545 1474
HMALL66	956195	3091	HMMER 1.8	PFAM: Adenylate kinases	PF00406	50.17	63	296
HMCND22	895981	3107	blastx.2	(AJ007798) stromal antigen 3, (STAG3) [Homo sapiens]	emb CAB59367.1	82% 90% 71%	85 445 10	456 573 168
HMCFB22	963794	3110	blastx.14	probable transposase - human transposon MER37	pir S72481 S72481	73% 82% 43% 61% 63%	183 119 313 5 90	320 187 423 5 122
HMCY77	753133	3117	HMMER 2.1.1	PFAM: Kelch motif	PF01344	51.9	7	132
HMMAB49	462502	3127	HMMER	PFAM: Zinc-binding	PF00099	3.49	166	183

HMMAC19	953580	3129	1.8 blastx.14	metalloprotease domain (AF003535) ORF2-like protein [Homo sapiens]	gi 2197085 gb AAD0 4635.1		47% 47% 87%	26 282 187	145 344 210
HMMCH04	944069	3208	blastx.2	unknown [Homo sapiens]	gb AAC50940.1		58%	423	680
HMQBU96	765162	3247	HMMER 1.8	PFAM: Helix-loop-helix DNA-binding domain	PF00010		7.33	8	40
HMQDZ19	940694	3267	blastx.14	urokinase plasminogen activator receptor [Homo sapiens]	gi 433901 emb CAA5 2191.1		100% 91%	89 133	124 168
HMSBV28	970579	3303	blastx.14	YKL249 [Saccharomyces cerevisiae]	gi 871536 emb CAA4 9304.1		92% 51% 50%	260 141 323	108 1 282
HMSCD15	918133	3310	HMMER 1.8	PFAM: Src homology domain 3	PF00018		41.06	453	599
			blastx.2	(AK000975) unnamed protein product [Homo sapiens]	dbj BAA91451.1		98% 29% 28%	453 387 80	635 479 175
HMSFR69	738588	3373	HMMER 1.8	PFAM: Core histones H2A, H2B, H3 and H4	PF00125		7.78	258	202
HMSG127	855759	9573	HMMER 1.8	PFAM: Bacterial muT protein	PF00293		5.56	276	202
HMSGP73	925385	3401	blastx.14	(AC004490) R29381_1 [Homo sapiens]	gi 2995577 gb AAC0 8316.1		94% 95%	141 901	908 972
HMSGX14	871492	3413	HMMER 1.8	PFAM: Ribosomal protein S12	PF00164		33.44	28	153
HMSHO64	746582	3431	HMMER 1.8	PFAM: Src homology domain 3	PF00018		11.08	316	405
			blastx.2	(AF030131) Plenty of SH3s; POSH [Mus]	gb AAC40070.1		47%	1	411

HMSHZ56	733386	3447	HMMER 1.8	musculus] PFAM: Zinc finger, CCHC class	PF00098	4.89	208	228
HMSJT11	965007	3491	blastx.14	(AF148805) latent nuclear antigen [Kaposi sarcoma- associated herpesvirus]	gi 5669894 gb AAD4 6501.1 AF148805_6	20%	667	1137
						24%	241	465
						21%	241	465
						23%	211	453
						16%	139	465
HMSJW19	744990	3498	HMMER 2.1.1	PFAM: BAH domain	PF01426	48.7	2	163
HMSKI08	959413	3509	blastx.14	(AF094516) E1-like protein [Homo sapiens]	gi 3820614 gb AAC6 9630.1	97%	97	513
HMSOM08	958216	3538	blastx.14	(AF082556) TRF1- interacting ankyrin-related ADP-ribose polymerase [Homo sapiens]	gi 3929219 gb AAC7 9841.1	76%	2	232
HMSOU92	948130	9578	blastx.2	(AF118082) PRO1902 [Homo sapiens]	gb AAAF22026.1 AF1 18094_21	64%	302	463
						63%	462	527
						88%	532	558
HMSOX47	948202	3548	blastx.14	cDNA EST EMBL:M89462 comes from this gene; cDNA EST 1.1 yk34947.5 comes from this gene; cDNA EST yk35899.5 comes from this	gi 3879085 emb CAA 94301.1	48%	514	612
						39%	365	463
						36%	266	355
						39%	173	256
						26%	514	591
HMVDU16	904807	3589	HMMER 1.8	PFAM: Core histones H2A, H2B, H3 and H4	PF00125	13.38	1252	1329
HMWQC09	924634	3606	blastx.14	Emf1 alpha [lphydata muelleri]	gi 9300 emb CAA494 72.1	50%	19	84
						33%	99	233
						66%	217	243

HMWDD54	932261	3610	blastx.14	(AF175223) SANT domain protein SMRTER [Drosophila melanogaster]	gi 5815245 gb AAD52614.1 AF175223_1	38%	292	345
HMWDF88	906769	3612	HMMER 1.8	PFAM: Low-density lipoprotein receptor domain class A	PF00057	41.61	171	245
			blastx.14	(AF110520) NG29 [Mus musculus]	gi 4050096 gb AAC97969.1	69% 48% 35% 50%	114 129 9 72	239 239 110 107
HMWGG55	920575	3642	blastx.14	DNA polymerase [Pyrococcus furiosus]	gi 216918 dbj BAA02362.1	94%	195	308
HMWGT07	953454	3645	blastx.14	(AL078579) putative protein [Arabidopsis thaliana]	gi 4972120 emb CAB43977.1	40% 40% 46%	218 395 113	322 475 157
HMWHN70	851334	3654	HMMER 1.8	PFAM: Zinc finger, C3HC4 type (RING finger)	PF00097	6.51	187	255
HNEBJ08	958742	3689	blastx.14	mucin 2 precursor, intestinal - human (fragments)	pit A49963 A43932	35% 83%	305 320	264 303
HNEDU01	909832	3748	blastx.14	(AC002398) F25965_3 [Homo sapiens]	gi 2477513 gb AAB81198.1	71% 57% 62% 43% 50%	207 80 1 323 337	323 205 87 412 384
HNFEF95	971171	3792	blastx.14	ORF_0493 [Escherichia coli]	gi 606260 gb AAA58123.1	98% 89% 81%	548 103 185	201 20 105
HNFFM25	705856	3818	HMMER	PFAM: Laminin B	PF00052	0.47	520	603

HNFT62	574623	3828	1.8	(Domain IV) PFAM: C2 domain	PF00168		2.74	207	272
HNFGI01	921431	3851	blastx.14	(AF118890) s-tomosyn isoform [Rattus norvegicus]	gi 4689231 gb AAD2 7819.1 AF118890_1		86% 100% 40%	234 153 287	302 200 361
HNFGI49	909707	3852	blastx.14	(AF086624) serine threonine kinase [Rattus norvegicus]	gi 380869 gb AAC6 8900.1		100% 100%	1 60	45 86
HNFGM76	908665	3862	HMMER 2.1.1 blastx.2	PFAM: Zinc finger, C2H2 type	PF00096		74.8	232	306
HNFHA11	967520	3874	HMMER 2.1.1 blastx.14	(AF132599) RANTES factor of late activated T lymphocytes-1 [Homo sapiens]	gb AAD26864.1 AF1 32599_1		92%	1	417
HNFKH77	576186	3890	HMMER 2.1.1 blastx.14	PFAM: Phosphoenolpyruvate carboxykinase [Escherichia coli]	PF01293		118.1	55	219
HNFHQ01	938114	3897	HMMER 2.1.1 blastx.14	PFAM: Aldehyde dehydrogenase family serine/threonine kinase with SH3 domain, leucine 1	gi 606337 gb AAA58 200.1		99%	55	360
HNFW14	939763	3908	HMMER 2.1.1	PFAM: Larophilin/CL-1- like GPS domain	PF00171		30.2	231	326
					gi 758593 emb CAA8 8531.1		28% 46% 46% 25% 41%	248 43 371 79 176	331 81 415 186 211
					PF01825		35.1	44	196

			blastx.2	(AF166382) serpentine receptor [Mus musculus]	gb AAF00617.1 AF166382.1	44%	38	283
HNF1G07	918389	3921	blastx.14	(AF128881) P13 kinase regulatory subunit P101 [Homo sapiens]	gb 4928058 gb AAD33397.1 AF128881.1	80% 60%	2 448	445 477
HNF1P50	965283	3936	blastx.14	mutant sterol regulatory element binding protein-2	gi 841318 gb AAA85718.1	65% 34% 85%	356 42 665	631 128 685
HNGAL92	953889	3976	blastx.14	phosphatidylserine decarboxylase [Escherichia coli]	gi 551827 gb AAA83896.1	73%	212	18
HNGAS51	773208	3984	HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF000099	2.57	144	182
HNGBF80	574475	4001	HMMER 1.8	PFAM: Zinc finger, C2H2 type	PF000096	4.98	88	111
HNGBH77	577361	4005	HMMER 1.8	PFAM: ATP synthase A chain	PF00119	9.81	130	189
HNGCE85	970738	4039	blastx.14	hypothetical protein Tigger 2 - human transposon MER37.1	pir S72489 S72489	72% 63%	284 212	210 180
HNGCX07	953900	4065	HMMER 1.8	PFAM: Src homology domain 3	PF00018	3.68	45	161
HNGEN37	663955	4160	HMMER 2.1.1	PFAM: Indole-3-glycerol phosphate synthases	PF00218	125.4	2	223
HNGEQ07	953647	4169	HMMER 1.8	PFAM: TPR Domain	PF00515	10.86	164	238
HNGER43	699391	4173	HMMER 1.8	PFAM: Bacterial mutT protein	PF00293	3.79	151	195
HNGER96	922996	4177	blastx.14	Bkm-like protein [Drosophila melanogaster]	gi 552132 gb AAA28872.1	60% 64%	250 250	294 291



HNGEW76	572874	4198	HMMER 1.8	PFAM: Helicases conserved C-terminal domain	PF00271	64% 75% 80% 4.66	250 215 28 194	291 250 250 57 247
HNGEX35	959230	4200	blastx.14	adenine phosphoribosyltransferase [Escherichia coli]	gil1773151 gb AAB4 0223.1	98%	205	366
HNGEX95	572897	4202	HMMER 1.8	PFAM: Zinc finger, C2H2 type	PF00096	5.32	196	219
HNGFG22	573084	4224	HMMER 1.8	PFAM: Bacterial regulatory proteins, luxR family	PF00196	9.2	166	240
HNGFG69	926873	4227	blastx.14	collagen [Ascaris suum]	gil159657 gb AAA29 371.1	44% 40% 40% 40% 50% 86.07	228 145 145 307 248 67 445	175 80 80 248 38 654
HNGFK28	544726	4234	HMMER 1.8	PFAM: ABC transporters	PF00005	100% 86% 86.07	1 654 445	651 989 654
HNGFK28	566798	9584	HMMER 1.8	MsbA protein. [Escherichia coli] PFAM: ABC transporters	dbj BAA35658.1  PF00005	100% 100% 117.67	1 654 342	651 989 1
HNGFK28	943114	9585	HMMER 1.8	MsbA protein. [Escherichia coli] PFAM: ABC transporters	dbj BAA35658.1  PF00005	100% 100% 117.67	1 654 342	651 989 1
			blastx.2	MsbA protein.	dbj BAA35658.1	100%	165	503



HNGGH78	924908	4306	blastx.14	type VII collagen [Crictetus griseus]	gi388625 gb AAA36 968.1	75% 66% 66% 60%	152 155 155 193	129 129 129 164
						50% 34% 42% 40% 50% 58% 38% 41% 50%	356 47 285 288 171 171 6 53 171	397 115 341 347 206 206 59 103 206
HNGGM10	964819	4317	HMMER 1.8	PFAM: Laminin B (Domain IV)	PF00052	0.51	424	441
HNGGR74	765698	4340	HMMER 1.8	PFAM: Zinc finger, C2H2 type	PF00096	6.36	14	58
HNGHT06	935706	4450	blastx.14	unknown protein [Homo sapiens]	gi1196398 gb AAA8 8020.1	50%	254	177
HNGHJ01	916748	4483	blastx.14	ORF2 [Rattus norvegicus]	gi56588 emb CAA37 645.1	50% 57% 57%	168 280 73	293 342 114
HNGKE07	952221	4630	blastx.14	collagen type VII [Homo sapiens]	gi495866 gb AAA58 965.1	58% 55% 47% 64% 57% 32% 33% 62%	336 93 155 327 266 87 81 355	286 40 105 286 225 13 1 332
HNGLE52	835972	4662	HMMER	PFAM:	PF00049	6.75	286	318

			1.8	Insulin/GP/Relaxin family				
HNGLG06	839088	4666	HMMER 1.8	PFAM: ABC transporters	PF000005	47.92	348	599
			blastx.2	Hypothetical protein HI0658 [Escherichia coli]	dbj BAA35501.1	99%	270	665
HNGLH82	954140	4668	blastx.14	diaminopimelate decarboxylase [Escherichia coli]	gi 455170 gb AAA83861.1	98%	416	249
						71%	193	47
HNGMM87	806036	4715	HMMER 1.8	PFAM: ATP synthase A chain	PF00119	63%	258	136
						8.41	237	362
HNGO022	953888	4762	blastx.14	(AE000449) putative xylanase [Escherichia coli]	gi 1790156 gb AAC76742.1	94%	104	3
						91%	151	116
HNHAI11	967668	4790	blastx.14	p15E carboxyterminal sequence [Kirsten murine sarcoma virus]	gi 4469304 emb CAA25493.1	38%	262	161
						28%	406	323
HNHBE19	724404	4798	HMMER 1.8	PFAM: Helicases conserved C-terminal domain	PF00271	53%	310	272
						4.4	113	145
HNHBY45	774280	4823	HMMER 1.8	PFAM: ATP synthase A chain	PF00119	8.4	228	347
HNHDM74	506621	4878	HMMER 1.8	PFAM: Phorbol esters / diacylglycerol binding domain	PF00130	1.89	395	427
HNHDI50	924211	4910	blastx.14	unknown protein [Homo sapiens]	gi 1196398 gb AAA88020.1	50%	33	170
						44%	23	169
						41%	6	164
HNHJE85	964882	4955	blastx.14	synexin - bovine (fragment)	pir A27695 A27695	54%	47	15
						46%	91	53

HNHET25	953410	5002	blastx.14	(A005562) SPR2D protein [Mus musculus]	gi 3093363 emb CAA06591.1	40%	114	85
						38%	91	53
HNHFA11	967126	5030	blastx.14	(AF144054) apoptosis related protein APR-4 [Homo sapiens]	gi 4868437 gb AAAD31316.1 AF144054.1	32%	347	246
						43%	250	203
						46%	207	169
HNHGD07	953416	5121	blastx.14	(AF053091) eyelid [Drosophila melanogaster]	gi 2981221 gb AAC06254.1	52%	212	355
						35%	342	401
						46%	164	241
						55%	227	280
						33%	295	384
						30%	259	384
						50%	346	381
						36%	268	333
						26%	259	384
						62%	367	390
						42%	322	378
						62%	367	390
						83%	367	384
HNHGE09	939727	5127	blastx.2	IDN4-CGTR14 PROTEIN.	sp Q9Y6Y5 Q9Y6Y5	81%	2	112
HNHGH20	959499	5146	blastx.14	notch4 [Homo sapiens]	gi 1841543 gb AAC63097.1	43%	56	9
						77%	154	128
						33%	256	167
						33%	297	244
HNHGV22	674653	5189	HMMER 1.8	PFAM: Helicases conserved C-terminal domain	PF00271	62%	131	108
						4.66	94	138
HNHHI10	964659	5251	blastx.14	ORF1 [Rattus norvegicus]	gi 56587 emb CAA37644.1	56%	75	28
						34%	157	71

HNHHL74	765598	5266	HMMER 1.8	PFAM: Bacterial mutT protein	PF00293	33% 63%	220 187	158 155
HNHIA95	908419	5318	HMMER 2.1.1	PFAM: gag gene protein p24 (core nucleocapsid protein)	PF00607	3.57	83	148
HNHHPH29	934456	5496	blastx.14	(AF118275) atrophin-related protein ARP [Homo sapiens]	gi4680231 gb AAD27584.1 AF118275_1	67.6	49	300
HOIAE91	935322	5497	HMMER 1.8	PFAM: Phorbol esters / diacylglycerol binding domain	PF00130	60% 45% 70% 50% 47%	363 14 91 262 310	407 73 120 297 360
HSATQ28	866951	5512	HMMER 1.8	PFAM: Ubiquitin carboxyl-terminal hydrolases family 2	PF00442	2.66	200	235
HSAYN79	471037	5646	HMMER 1.8	PFAM: RNA recognition motif (aka RRM, RBD, or RNP domain)	PF00076	11.1	90	122
HSYBL15	660053	5682	HMMER 1.8	PFAM: Phorbol esters / diacylglycerol binding domain	PF00130	4.12	360	380
HSYDP04	970789	5686	blastx.14	(AF113615) FH1/FH2 domain-containing protein FHOS [Homo sapiens]	gi5106956 gb AAD39906.1 AF113615_1	22.31	2	70
HT3SA07	954360	5702	blastx.14	ORF2 contains a reverse transcriptase domain; ORF2 [Homo sapiens]	gi339771 gb AAA51622.1	100% 50% 47%	77 408 393	394 467 443
HT4GJ85	909971	5714	HMMER	PFAM: PH (pleckstrin	PF00169	50% 54%	83 47	178 79
						11.11	365	451

			1.8 blastx.14	homology) domain (AF053974) SWAP-70 [Mus musculus]	gi 3290154 gb AAC4 0155.1	53%	251	448
HT3EA69	952359	5721	blastx.14	(AL032624) cDNA EST yk321h8.5 comes from this gene; 1 from this gene [Caenorhabditis elegans]	gi 3881086 emb CAA 21522.1	33%	448	492
HTAAW46	719422	5735	HMMER 1.8	PFAM: HMG (high mobility group) box	PF00505	5.82	6	35
HTABG87	940153	5745	HMMER 1.8	PFAM: Eukaryotic protein kinase domain	PF00069	13.81	240	335
HTACW17	961560	5760	blastx.14	(AF006064) protein kinase homolog [Fowlpox virus]	gi 2393890 gb AAC5 8236.1	54%	8	139
HTAFE69	944409	5797	blastx.2	(AC007660) unknown protein [Arabidopsis thaliana]	gi 4895220 gb AAD3 2806.1 AC007660_7	37%	54	221
HTAHL45	908949	5817	blastx.2	(AK000496) unnamed protein product [Homo sapiens]	dbj BAA91205.1	61%	212	265
			HMMER 2.1.1	PFAM: SCAN domain	PF02023	69%	432	704
			blastx.14	(AC004522) Zn-finger- like protein, similar to Z98745 (PID:g2924250) [Homo sapiens]	gi 3006231 gb AAC0 9486.1	228.7	268	555
HTAHV04	926747	5826	blastx.14	(AC005757) R32611_1 [Homo sapiens]	gi 3688089 gb AAC6 2258.1	65%	220	534
HTAJN08	958057	5841	HMMER	PFAM: Helicases	PF00271	36%	529	642
						100%	3	446
						5.49	20	55

			1.8	conserved C-terminal domain				
HTDAE43	971582	9597	blastx.14	(AF144054) apoptosis related protein APR-4 [Homo sapiens] PFAM: RhoGAP domain	gi 4868437 gb AAD31316.1 AF144054_1	53%	526	296
HTGCH58	909849	5895	HMMER 2.1.1 blastx.14	carboxyl terminus of the predicted protein shows 1 comes from this gene; cDNA EST EMBL:D32994 comes from this gene	PF00620	91.4	420	797
HTGDM65	967158	5918	blastx.14	SH3 domain binding protein [Rattus norvegicus]	gi 3874826 emb CAA86318.1	37% 44% 61%	420 657 771	605 758 809
HTGDT91	974962	5921	HMMER 2.1.1 blastx.14	PFAM: SpoU rRNA Methylase family alternate gene name yibK [Escherichia coli]	gi 1185397 gb AAA87791.1	39% 50% 39% 47% 39% 28% 40%	127 186 278 186 278 337 260	59 139 210 136 210 263 195
HTGDW96	967030	5926	HMMER 2.1.1 blastx.14	PFAM: Domain of unknown function (AL034490) similar to yeast ngg1-interacting factor 3	PF00588	107.6	315	638
					gi 466744 gb AAB18583.1	100% 100% 76% 81% 130.2	315 531 457 497 334	467 638 495 529 711
					gi 4008560 emb CAA22481.1	60% 43% 37%	1087 460 385	1275 660 513



			[Schizosaccharomyces pombe]			61%	361	414
HTGEL46	685425	5936	HMMER 1.8	PFAM: Phorbol esters / diacylglycerol binding domain	PF00130	58%	1312	1347
HTGEQ11	967047	5944	HMMER 2.1.1 blastx.14	PFAM: Cytosol aminopeptidase family	PF00883	191	27	305
				aminopeptidase A [Escherichia coli]	gi 1054725 emb CAA60164.1	95% 83% 88%	27 320 1	305 391 27
HTGER72	683469	5949	HMMER 1.8	PFAM: Src homology domain 3	PF00018	2.4	174	203
HTGFZ03	923443	5968	HMMER 2.1.1 blastx.14	PFAM: RNA polymerase beta subunit	PF00562	30.7	21	110
				(AF025424) RNA polymerase I 127 kDa subunit [Rattus norvegicus]	gi 2739048 gb AAB94600.1	76%	3	275
HTGGL23	974590	5973	blastx.14	(AE000218) putative adhesion and penetration protein [Escherichia coli]	gi 1787452 gb AAC74286.1	87%	3	443
HTHCB68	660309	5996	HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF00099	3	162	209
HTJAB35	880424	9601	HMMER 1.8	PFAM: Ank repeat	PF00023	35.64	242	325
HTJMT23	948518	6056	blastx.14	(AF182426) arylacetamide deacetylase [Rattus norvegicus]	gi 5923874 gb AAD56394.1 AF182426_1	58%	2	160
HTOAK34	966800	6081	HMMER	PFAM: Eukaryotic protein	PF00069	32.41	1020	1190

			1.8 blastx.14	kinase domain (AF084205) serine/threonine protein kinase TAO1 [Rattus norvegicus] PFAM: RasGEF domain	gi 3452473 gb AAC7 1014.1	75%	954	1190
HTODG16	909952	6108	HMMER 2.1.1 blastx.14	PFAM: RasGEF domain	PF00617	148.5	4	402
HTOFT34	527144	6146	HMMER 1.8	CDC25 [Saccharomyces kluyveri] PFAM: Phorbol esters / diacylglycerol binding domain	gi 171187 gb AAA34 479.1  PF00130	34% 4.53	13 235	399 264
HTOHL35	537364	6173	HMMER 1.8	PFAM: Zinc finger, C2H2 type	PF00096	6.52	4	33
HTOIY09	836003	6201	HMMER 1.8	PFAM: Insulin/IGF/Relaxin family	PF00049	7.08	61	123
HTSHF47	720403	6229	HMMER 1.8	PFAM: Helix-loop-helix DNA-binding domain	PF00010	7.82	105	140
HTSHM38	972248	6230	HMMER 2.1.1 blastx.14	PFAM: EGF-like domain	PF00008	72	299	406
				(AB011532) MEGF6 [Rattus norvegicus]	gi 3449294 dbj BAA3 2462.1	88% 50% 53% 42% 42% 43% 40% 46% 70% 66%	287 278 320 299 287 290 341 287 114 413	538 460 466 460 427 427 481 415 173 457

50%	467	532
61%	245	283
35%	188	280
47%	482	538
52%	245	295
39%	476	544
61%	245	283
31%	188	283
50%	245	286
29%	170	280
55%	230	283
69%	245	283
53%	245	283
50%	485	532
35%	452	535
47%	482	532
47%	482	532
50%	245	304
31%	299	412
70%	251	280
58%	251	286
30%	434	532
58%	245	280
53%	245	283
37%	245	316
63%	317	349
75%	245	268
47%	245	295
37%	251	322
54%	251	283
31%	320	406

				36%	230	286
				40%	401	460
				60%	203	232
				54%	473	505
				34%	308	376
				50%	245	280
				25%	329	445
				62%	245	268
				37%	485	532
				29%	251	343
				50%	227	262
				45%	251	283
				24%	296	406
				71%	485	505
				40%	473	532
				33%	344	406
				71%	359	379
				50%	245	280
				60%	454	483
				62%	245	268
				33%	491	544
				33%	320	382
				63%	344	376
				62%	359	382
				71%	203	223
				45%	203	235
				37%	215	262
				37%	359	406
				38%	356	409
				36%	320	376
				40%	320	379

HTWCG65	869547	6260	HMMER 1.8	PFAM: Core histones H2A, H2B, H3 and H4 (AF036548) RGC-32 [Rattus norvegicus]	PF00125		60%	251	280
HTWEY30	918641	6299	blastx.14		gi 3800742 gb AAC6 8839.1		15.45	220	306
HTWJA59	812705	6314	HMMER 1.8	PFAM: Helicases conserved C-terminal domain	PF00271		88%	613	434
HTXCY84	924996	6359	HMMER 2.1.1	PFAM: Aldehyde dehydrogenase family	PF00171		4.95	172	219
			blastx.14	(AF038838) proline dehydrogenase [Klebsiella aerogenes]	gi 2766693 gb AAB9 5478.1		23.9	104	217
HTXDW14	966588	6366	blastx.14	(AB029335) HrPET-3 [Halocynthia roretzi]	gi 5360271 dbj BAA8 1908.1		78% 45% 41%	47 16 20	241 48 70
HTXDX61	784768	6367	HMMER 2.1.1	PFAM: Amidase	PF01425		54% 45%	869 773	777 663
HTXFN69	869397	6394	HMMER 1.8	PFAM: HMG (high mobility group) box	PF00505		123.2	61	330
HTXGL73	529745	6403	HMMER 1.8	PFAM: Phorbol esters / diacylglycerol binding domain	PF00130		6.76	72	137
HTXJ168	912611	6420	blastx.14	RAB14 [Rattus norvegicus]	gi 206535 gb AAA41 994.1		2.21	144	176
HTXJM73	783572	6425	HMMER 1.8	PFAM: Bacterial muT protein	PF00293		97% 60% 59% 52%	230 367 482 373	370 450 547 429
HTXKQ55	947789	6453	HMMER 2.1.1	PFAM: Peptidase family M3	PF01432		2.87	97	123
							50.1	3	299

			blastx.14	mitochondrial intermediate peptidase precursor [Homo sapiens]	gi 1763642 gb AAC51231.1	96% 100%	3 335	302 367
HTXNY74	918076	6525	blastx.14	(AF078856) p47 [Homo sapiens]	gi 5531827 gb AAD44488.1	89% 96%	93 2	530 94
HTXPT68	870074	6555	HMMER 2.1.1	PFAM: NOL1/NOP2/sun family	PF011189	43.1	29	196
HTXQC36	961161	6560	blastx.14	(AB012223) ORF2 [Canis familiaris]	gi 2981631 dbj BAA25253.1	51% 57% 60% 42%	9 326 145 170	143 382 174 247
HTXRM86	975072	6575	HMMER 2.1.1	PFAM: Prokaryotic DNA topoisomerase	PF011131	99	243	446
			blastx.14	DNA topoisomerase III (EC 5.99.1.-) [Escherichia coli]	gi 1742870 dbj BAA15551.1	51% 40%	177 3	440 158
HTXSB88	914627	6577	blastx.14	(AF077042) 30S ribosomal protein S7 homolog [Homo sapiens]	gi 4689132 gb AAD27775.1 AF077042_1	84%	559	771
HTXSR92	973095	6579	blastx.2	(AB016962) synGAP-b1 [Rattus norvegicus]	dbj BAA74972.1	60% 55%	302 1	421 60
HUIAM39	911399	6586	blastx.14	(AF051325) SH3 domain containing adaptor protein [Homo sapiens]	gi 4091782 gb AAC99298.1	46% 32%	170 709	310 885
HUJCM08	957784	6589	blastx.14	(AF015950) telomerase reverse transcriptase [Homo sapiens]	gi 2330017 gb AAC51672.1	100%	2	244
HUUA06	966816	6597	blastx.14	(AF151854) CGI-96 protein [Homo sapiens]	gi 4929661 gb AAD34091.1 AF151854_1	88% 100% 68% 36%	595 464 537 561	521 396 481 487

HWAAF66	908541	6612	HMMER 2.1.1 blastx.14	PFAM: KRAB box repressor protein [Homo sapiens]	PF01352	65.3	90	278
HWAAU03	923734	6619	HMMER 1.8	PFAM: Phorbol esters / diacylglycerol binding domain	gi 2789430 dbj BAA2 4380.1  PF00130	54% 2.21	60 332	212 373
HWACA38	943074	6637	HMMER 1.8 blastx.14	PFAM: Bacterial mutT protein (AL033536) predicted using GeneFinder, similar to 111 elegans]	PF00293	3.68	344	376
HWADF26	957347	6656	HMMER 1.8	PFAM: Lectin C-type domain short and long forms	gi 3947651 emb CAA 22138.1  PF00059	39% 52% 104.26	251 766 859	433 834 509
HW/AEN20	868490	6691	HMMER 1.8 blastx.2	(AF175206) lectin-like receptor F1 [Homo sapiens]	gb AAAF37804.1 AF1 75206_1	100%	3	596
HW/AFW39	947915	6697	HMMER 2.1.1 blastx.2	PFAM: Zinc finger, C2H2 type PFAM: Peptidase family M1 (AF106037) adipocyte- derived leucine aminopeptidase [Homo sapiens]	PF00096 PF01433 gb AAAF07395.1 AF1 06037_1	6.01 79.5 96%	251 200 200	313 367 367
HW/AFX39	907631	6698	HMMER 2.1.1	Zn-binding protein [Pleurodeles waltl]	gi 213868 gb AAA49 614.1  PF01437	46% 50% 25.8	118 19 898	354 120 1035
HW/AGM33	888685	6710	HMMER 2.1.1	PFAM: Plexin repeat				

HWAGX37	959586	6711	blastx.14	unknown protein [Homo sapiens]	gi 1196433 gb AAA88038.1	47%	215	283
HW/HH10	960646	6714	blastx.14	retinoid X receptor interacting protein [Mus musculus]	gi 709961 gb AAC52167.1	62%	1215	383
						66%	513	343
						45%	642	412
						44%	1272	1198
						66%	1824	1798
HW/HS94	909667	6715	blastx.14	(AF151363) Cdc42 GTPase-activating protein [Mus musculus]	gi 5020264 gb AAD38043.1 AF151363.1	63%	278	484
HW/BAL44	959449	6720	blastx.14	(AF151877) CGI-119 protein [Homo sapiens]	gi 4929707 gb AAD34114.1 AF151877.1	75%	487	510
HW/BAQ16	868363	6722	HMMER 1.8	PFAM: RNA recognition motif (aka RRM, RBD, or RNP domain)	PF00076	4.8	857	898
HW/BBR65	747723	6741	HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF00099	4.15	185	205
HW/BDM24	963498	6771	blastx.14	(AJ388555) hypothetical protein [Canis familiaris]	gi 5441611 emb CAB46854.1	83%	908	997
						100%	990	1040
HW/BEX27	682583	6785	HMMER 1.8	PFAM: Helix-loop-helix DNA-binding domain	PF00010	88%	837	863
						38.64	184	336
HY/AAF33	915050	6820	blastx.14	(AF121858) sorting nexin 8 [Homo sapiens]	gi 4689256 gb AAD27831.1 AF121858.1	81%	273	434
						96%	217	306
						36%	172	270
HY/AA08	926017	6831	blastx.14	ORF-3 protein [Pseudorabies virus]	gi 334072 gb AAA47471.1	62%	203	156
						34%	84	7
						36%	125	69
						63%	150	118



HYABP53	971448	6848	HMMER 2.1.1	PFAM: Immunoglobulin domain	PF00047	37%	282	211
HYABB43	800006	6860	HMMER 2.1.1 blastx.2	PFAM: Alpha-2- macroglobulin family alpha-2-macroglobulin [Mus musculus]	PF00207	90.9	257	427
HYAAU65	909956	6863	HMMER 2.1.1	PFAM: RasGEF domain	gb AAA39508.1	67%	206	27
HWBEG18	909798	6883	HMMER 2.1.1 blastx.14	PFAM: RasGEF domain	PF00617	47	263	36
				PFAM: EF hand	PF00036	33.3	2	112
				(AF106071) ras activator RasGRP [Homo sapiens]	gi 4038292 gb AAC9 7349.1	71%	505	591
						59%	698	889
						46%	382	597
						70%	103	420
						48%	604	684
						66%	2	142
						32.5	619	654
HWBCS08	909031	6897	HMMER 2.1.1 blastx.14	PFAM: B-box zinc finger.	PF00643	92%	263	388
				(AF119043) transcriptional intermediary factor 1 gamma; TIF1 gamma [Homo sapiens]	gi 4325109 gb AAD1 7259.1	92%	2	562
HWBAQ71	944080	6918	blastx.2	predicted using Genefinder [Caenorhabditis elegans]	emb CAA97423.1	34%	141	464
HWAFG12	969605	6934	blastx.14	(AF071081) proline-rich mucin homolog [Mycobacterium tuberculosis]	gi 5305335 gb AAD4 1594.1 AF071081_1	34%	112	17
						50%	195	142
						28%	398	264
						40%	365	300

[illegible]

HW/AEC08	958115	6947	HMMER 2.1.1 blastx.14	norvegicus] PFAM: Spectrin repeat (AL080133) hypothetical protein [Homo sapiens]	PF00435		29.5	3	215
					gi 5262574 emb CAB 45729.1		69%	12	209
							70%	381	452
							31%	18	209
							29%	228	308
HW/ACY70	756888	6956	HMMER 2.1.1	PFAM: RIO1/ZK632.3/MJ0444 family	PF01163		96	280	552
HW/ABG11	949088	6971	HMMER 2.1.1 blastx.2	PFAM: Glucosamine-6- phosphate isomerase unnamed protein product [unidentified]	PF01182		225.7	67	381
					emb CAA03416.1		91%	67	480
HUUDR34	944903	6984	blastx.14	similar to SH3-binding protein [Homo sapiens]	gi 4826478 emb CAB 42896.1		82%	2	550
							100%	571	594
							77%	552	578
							100%	596	616
HUUCJ02	940813	6986	blastx.14	(AF132984) nuclear pore complex interacting protein NP1P [Homo sapiens]	gi 4959568 gb AAD3 4394.1 AF132984_1		99%	770	417
							89%	417	250
							71%	300	187
							58%	226	119
							87%	278	231
							100%	261	226
							54%	261	196
							60%	258	199
							81%	181	149
							83%	152	117
							40%	229	149
							100%	152	126
							90%	192	163

HTXOOI5	869261	7011	HMMER 2.1.1	PFAM: Ubiquitin family	PF00240	66%	300	274
HTXL-S08	938357	7023	blastx.14	(AF090989) high-risk human papilloma viruses E6 1 alpha [Homo sapiens]	gi 4151328 gb AAD1 2543.1	48% 68% 41% 57% 70% 27%	745 1006 1 511 427 580	987 1146 237 645 477 645
HTWKB07	952841	7085	blastx.14	(AF003535) ORF2-like protein [Homo sapiens]	gi 2197085 gb AAD0 4635.1	60% 75% 50% 33% 70%	25 259 205 36 167	84 294 258 116 196
HTWJH08	790185	7087	blastx.2	(AK000385) unnamed protein product [Homo sapiens]	dbj BAA91131.1	61%	197	51
HTWJH08	846554	9615	blastx.2	(AK000385) unnamed protein product [Homo sapiens]	dbj BAA91131.1	61%	197	51
HTWJF50	911448	7089	blastx.14	myosin I [Rattus norvegicus]	gi 3724141 emb CAA 50871.1	48% 53% 55% 46% 39% 50%	1009 334 732 863 40 686	1428 681 851 1012 108 715
HTWRFQ19	586124	7091	HMMER 2.1.1	PFAM: Sema domain	PF01403	62.9	14	184
HTOLA82	844319	7198	HMMER 1.8	PFAM: Zinc-binding metallopeptidase domain	PF00099	4.25	50	82
HTOHI14	659280	7204	HMMER	PFAM: Asparaginase	PF01112	20.7	140	217

HTODM08	960113	7222	2.1.1 blastx.14	(AF106069) deubiquitinating enzyme [Homo sapiens]	gi 5814097 gb AAD5 2099.1 AF106069_1	33%	5	367
HTHBV73	946168	7282	blastx.2	(AK001868) unnamed protein product [Homo sapiens] PFAM: SET domain	dbj BAA91951.1	52% 45%	4 162	183 332
HTGEX10	963862	7305	HMMER 2.1.1 blastx.14	PFAM: SET domain	PF00856	105.2	580	960
HTGEA37	908606	7311	blastx.14	(AC005065) determined by GENSCAN prediction and 1	gi 4153862 gb AAD0 4721.1	65% 40%	601 337	1017 477
HTAIF22	910040	7364	HMMER 2.1.1 blastx.14	(AF001293) aiolos [Mus musculus] PFAM: RhoGEF domain	gi 2150044 gb AAB5 8795.1  PF00621	80%	1	216
HTAIF11	965738	7365	blastx.14	(AL022271) similar to Guanine nucleotide exchange 1.1.1 this g	gi 3876654 emb CAA 18349.1	64%	281	397
HTAEV23	959129	7369	HMMER 2.1.1 blastx.14	(AF061555) ubiquitin- protein ligase E3-alpha [Mus musculus] PFAM: WW domain	gi 3170887 gb AAC4 0165.1  PF00397	48% 50%	6 297	293 392
HTAEP05	932459	7370	blastx.14	This gene is novel. [Homo sapiens] Pro-Pol-dUTPase polyprotein [Mus musculus]	gi 603953 dbj BAA07 893.1  gi 2063210 emb CAA 73251.1	89%	823	359
						76% 48% 47% 44%	225 406 3 500	275 510 59 553

HTABK47	720684	7379	HMMER 2.1.1	PFAM: Monooxygenase	PF01360		77%	386	412
HSYCV01	940661	7408	HMMER 1.8	PFAM: Hydroxymethylglutaryl- coenzyme A reductase (AL110271) hypothetical protein [Homo sapiens]	PF00369		23.3	371	430
HSAWR08	959943	7458	blastx.14	PFAM: gag gene protein p24 (core nucleocapsid protein)	gi 5817084 emb CAB 53709.1		7.29	448	492
HSAUL84	908440	7504	HMMER 2.1.1		PF00607		98%	123	287
			blastx.14				43.3	105	302
HNHOF94	948720	7551	blastx.2	gag protein [Human endogenous retrovirus K1 (AK000496) unnamed protein product [Homo sapiens]	gi 1780975 emb CAA 71418.1  dbj BAA91205.1		83% 60% 67%	135 24 176	299 152 484
HNHNP81	928378	7554	HMMER 1.8	PFAM: 7 transmembrane receptor (rhodopsin family)	PF00001		58.09	233	511
			blastx.2	(AF091575) olfactory receptor [Rattus norvegicus]	gb AAC64595.1		61% 52%	236 502	505 618
HNHLC01	915363	7581	blastx.14	unknown protein [Homo sapiens]	gi 1196431 gb AAA8 8036.1		46% 40% 36% 61% 46%	5 57 133 219 260	82 131 207 257 304
HNHGV62	743400	7603	blastx.2	(AK000385) unnamed protein product [Homo sapiens]	dbj BAA91131.1		62% 76%	52 287	285 349

HNHGE31	698046	7624	HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF000099	3.3	83	109
HNHVF49	975415	7644	blastx.2	hypothetical protein (L1H 3' region) - human	pir B34087 B34087	81% 71% 90%	483 227 217	190 6 188
HNHVF24	903741	7657	HMMER 2.1.1	PFAM: Sodium:neurotransmitter symporter family	PF00209	37.2	208	306
			blastx.14	(AF075266) orphan transporter isoform B9 [Mus musculus]	gi 3347930 gb AAC2 7761.1	76% 27%	187 414	327 467
HNHDF07	953883	7702	HMMER 1.8	PFAM: Fibronectin type III domain	PF00041	7.48	242	319
HNHDC29	904546	7704	blastx.14	contactin associated protein [Homo sapiens]	gi 1857708 gb AAB4 8481.1	98%	219	7
HNHIC32	861673	7716	HMMER 1.8	PFAM: 7 transmembrane receptor (rhodopsin family)	PF00001	133.17	195	545
			blastx.2	(AF112461) G protein- coupled receptor 57 [Homo sapiens]	gb AAF27279.1 AF1 12461.1	100% 100% 100%	189 112 56	551 186 112
HNHIC32	956105	9645	HMMER 1.8	PFAM: 7 transmembrane receptor (rhodopsin family)	PF00001	133.17	951	601
			blastx.2	(AF112461) G protein- coupled receptor 57 [Homo sapiens]	gb AAF27279.1 AF1 12461.1	100% 100% 100%	555 478 422	917 552 478
HNHBF47	949027	7731	HMMER 1.8	PFAM: Cadherin	PF00028	44.76	668	522
			blastx.2	(AB028499) Flamingo 1	db BAA84070.1	96%	409	666

[Mus musculus]				92%	5	259
				91%	666	923
				86%	243	398
				42%	412	660
				36%	370	660
				36%	412	660
				43%	669	896
				33%	355	699
				43%	666	884
				39%	648	890
				38%	20	247
				32%	11	253
				30%	361	648
				36%	14	235
				39%	654	884
				37%	14	247
				35%	26	247
				35%	666	878
				32%	412	699
				37%	672	854
				28%	433	708
				40%	270	380
				35%	270	380
				37%	270	398
				44%	270	371
				38%	270	371
				33%	264	362
				32%	683	829
				29%	2	262
				57%	723	764
				35%	270	374



HNHAF61	742116	7745	HMMER 1.8 blastx.2	PFAM: Cadherin  (AF152473) protocadherin alpha C1 short form protein [Homo sapiens]	PF00028		39%	412	480
							46.67	330	461
HNHAF61	955094	9649	blastx.14	(AF152303) protocadherin alpha C1 [Homo sapiens]	gb AAD43734.1 AF1 52473_1		75%	81	677
							84%	173	364
HNHAF61	955094	9649	blastx.14	(AF152303) protocadherin alpha C1 [Homo sapiens]	gb AAD43734.1 AF1 52473_1		33%	87	686
							93%	1	84
HNHAF61	955094	9649	blastx.14	(AF152303) protocadherin alpha C1 [Homo sapiens]	gb AAD43734.1 AF1 52473_1		40%	10	75
							98%	325	1071
HNHAF61	955094	9649	blastx.14	(AF152303) protocadherin alpha C1 [Homo sapiens]	gb AAD43734.1 AF1 52473_1		40%	715	987
							42%	499	660
HNHAF61	955094	9649	blastx.14	(AF152303) protocadherin alpha C1 [Homo sapiens]	gb AAD43734.1 AF1 52473_1		32%	778	1023
							37%	724	867
HNHAF61	955094	9649	blastx.14	(AF152303) protocadherin alpha C1 [Homo sapiens]	gb AAD43734.1 AF1 52473_1		100%	225	275
							77%	176	229
HNHAF61	955094	9649	blastx.14	(AF152303) protocadherin alpha C1 [Homo sapiens]	gb AAD43734.1 AF1 52473_1		30%	496	684
							89%	269	325
HNHAF61	955094	9649	blastx.14	(AF152303) protocadherin alpha C1 [Homo sapiens]	gb AAD43734.1 AF1 52473_1		35%	895	1011
							40%	568	663
HNHAF61	955094	9649	blastx.14	(AF152303) protocadherin alpha C1 [Homo sapiens]	gb AAD43734.1 AF1 52473_1		36%	717	791
							50%	499	540
HNGOZ40	969158	7757	blastx.14	(AF155098) NY-REN-8 antigen [Homo sapiens]	gi 5360091 gb AAD4 2864.1 AF155098_1		78%	599	477
HNGNY02	918626	7769	HMMER 1.8	PFAM: FAD/NAD- binding domain in oxidoreductases	PF00175		4.43	366	440
HNGND01	915294	7778	HMMER 1.8	PFAM: Phorbol esters / diacylglycerol binding domain	PF00130		2.07	464	490
HNGMW65	950173	7781	blastx.2	(AF010144) neuronal thread protein AD7c-NTP	gb AAC08737.1		62%	340	143
							67%	340	248

HNGMD48	974358	7788	HMMER 1.8	[Homo sapiens] PFAM: Cystatin domain	PF00031	45% 60% 55% 68% 43% 43% 55% 64% 57% 47%	417 345 80 81 200 414 205 392 202 86	247 247 3 25 111 346 152 351 125 18
HNGLY08	948825	7791	blastx.14	(AJ010949) calcium channel alpha-2-delta-C subunit [Mus musculus]	gi 4186073 emb CAA 09423.1	79%	219	392
HNGLL07	952236	7795	blastx.14	KERATIN TYPE II CYTOSKELETAL 8 (FRAGMENT).	sp Q29386 Q29386	41% 71% 83% 72%	199 43 77 242	77 2 42 210
HNGKM74	942758	7801	HMMER 1.8 blastx.2	PFAM: HMG (high mobility group) box (AL117470) hypothetical protein [Homo sapiens]	PF00505	5.95	437	526
HNGIR10	964715	7837	blastx.14	NK10 [Mus musculus]	emb CAB55945.1  gi 506502 emb CAA5 6225.1	40% 61% 62% 54% 52% 54% 53% 50% 44%	2 196 193 199 196 193 199 193 196	817 2 2 2 2 2 2 2 8

HNGFF50	941480	7879	blastx.14	(AJ010949) calcium channel alpha-2-delta-C subunit [Mus musculus]	gi 4186073 emb CAA-09423.1	45% 61% 57% 37% 26% 39% 46% 50% 33% 30%	193 199 196 178 217 115 181 232 309 306	2 92 83 11 2 2 104 197 256 238
HNGEO79	951489	7897	HMMER 1.8 blastx	PFAM: IG (immunoglobulin) superfamily (AF143185) high affinity immunoglobulin gamma Fc 1	PF00047 gb AAD34946.1 AF143185_1	33.71% 54% 41% 77% 36%	290 287 404 230 140	466 385 520 283 214
HNGEI11	967314	7902	blastx.14	pol polyprotein [Baboon endogenous virus]	gi 509838 gb AAA87332.1	70% 42% 53%	258 39 324	317 152 368
HNGDM11	967512	7933	blastx.14	reverse transcriptase [Homo sapiens]	gi 439877 gb AAB02291.1	36% 50% 47% 20%	381 276 154 210	292 205 104 82
HNGDA08	959964	7952	HMMER 1.8	PFAM: Zinc finger, CCHC class	PF00098	5.01	261	284
HNGAZ08	959977	7973	blastx.14	p40 [Homo sapiens]	gi 2072966 gb AAC51272.1	45% 40%	391 93	320 19

HNF1D11	966347	7997	blastx.14	(AF132948) CGI-14 protein [Homo sapiens]		gi 4680667 gb AAD27723.1 AF132948_1		40%	144	100
HNF1R56	733297	8003	HMMER 1.8	PFAM: IG (immunoglobulin) superfamily		PF00047		35%	316	266
HNF1D77	955894	8051	blastx.14	(AB020063) Keap1 [Mus musculus]		gi 3894323 dbj BAA34639.1		100%	14	115
								2.96	200	150
								90%	384	64
								44%	387	91
								42%	420	91
								38%	339	91
								44%	387	232
								100%	79	44
								27%	402	316
								85%	360	340
HNEB181	529571	8067	HMMER 2.1.1	PFAM: N-acetyltransferase		PF00797		40.5	18	125
HMWEN61	909931	8125	blastx.14	(AF020313) proline-rich protein 48 [Mus musculus]		gi 2624972 gb AAB94880.1		84%	89	307
								100%	89	9
HMWBT59	893995	8141	HMMER 1.8	PFAM: 4 transmembrane segments integral membrane proteins		PF00335		27.49	51	113
HMSMN71	927097	8184	HMMER 1.8	PFAM: Ubiquitin family		PF00240		32.11	24	200
								78%	3	518
								63%	550	606
								53%	550	594
								36%	281	403
HMSJL53	921263	8196	blastx.14	decorin (PGL) [Mus musculus]		gi 53669 emb CAA37876.1		46%	48	131
								35%	134	244

HMSHE81	784966	8218	HMMER 2.1.1	PFAM: PX domain	PF00787	29.1	128	421
HMSDL70	909997	8240	blastx.14	(AF083331) kinesin-like protein KIF1B [Rattus norvegicus]	gi3493139 gb AAC33292.1	100%	2	103
HMSBO95	796724	8258	HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF00099	2.61	273	302
HMMBL55	731523	8320	HMMER 1.8	PFAM: Phorbol esters / diacylglycerol binding domain	PF00130	2.03	227	271
HMMAT08	959005	8327	blastx.14	DOCK180 protein [Homo sapiens]	gi1339910 dbj BAA09454.1	49% 66%	137 310	301 426
HMCHZ77	771795	8350	HMMER 2.1.1	PFAM: Nucleoside transporter	PF01733	81.6	5	283
HMALZ77	856266	8362	HMMER 2.1.1	PFAM: Isochorismatase family	PF00857	88.5	2	232
HMAIL09	950168	8365	HMMER 1.8	PFAM: ADP-glucose pyrophosphorylase	PF00483	150.92	20	256
HMAIQ20	669436	8367	blastx.14	t270 [Escherichia coli]	gi290545 gb AAA62048.1	100% 100%	254 468	469 512
HMAIH15	956705	8368	HMMER 1.8	PFAM: Bacterial muT protein	PF00293	3.43	172	234
HMAIA55	899404	8369	blastx.2	Hypothetical protein M10456 [Escherichia coli]	dbj BAA35499.1	100%	3	203
HMAIF74	944465	8377	blastx.2	(AF027204) putative tetraspan transmembrane protein L6H [Homo sapiens]	gb AAAB82947.1	35% 39%	188 601	532 789
			HMMER 2.1.1	PFAM: Leucine Rich Repeat	PF00560	42.8	369	440

				blastx.2	leucine-rich repeat protein [Arabidopsis thaliana]	emb CAA76000.1	34%	294	674
HMACV54	922354	8379		HMMER 2.1.1	PFAM: Aldose 1- epimerase	PF01263	116	418	176
HMABD66	388074	8381		HMMER 2.1.1	PFAM: 60kD inner membrane protein	PF02096	59.8	222	365
HLYHK61	932994	8386		blastx.14	GTP binding protein [Mus musculus]	gi 53169 emb CAA36 803.1	88% 95% 96% 82% 90%	133 489 33 723 398	420 686 131 809 487
HLYHK34	703776	8387		HMMER 1.8	PFAM: Core histones H2A, H2B, H3 and H4	PF00125	13.18	436	519
HLYQG11	966539	8401		HMMER 1.8	PFAM: RNA recognition motif. (aka RRM, RBD, or RNP domain)	PF00076	4.45	96	134
HLYEA70	943886	8431		HMMER 2.1.1	PFAM: Dihydrodipicolinate synthetase family	PF00701	22.8	304	408
HLYCF37	949401	8459		HMMER 1.8	PFAM: Core histones H2A, H2B, H3 and H4	PF00125	12.84	1249	1326
HLYBX91	790234	8463		HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF00099	3.14	710	754
HLMLH66	910804	8555		HMMER 2.1.1	PFAM: Fibrinogen beta and gamma chains, C- terminal globular domain	PF00147	40.5	157	252
				blastx.14	(AF 07253) angiotensin Y1 [Homo sapiens]	gi 4378598 gb AAAD1 9608.1	65% 72% 30%	157 333 41	252 363 100
HLCD67	887375	8581		HMMER	PFAM: BTB/POZ domain	PF00651	101.9	160	504

HJPA Y56	909242	8600	2.1.1 HMMER 2.1.1 blastx.2	PFAM: Zinc finger, C2H2 type (AC004076) R30217_1 [Homo sapiens]	PF00096 gb AAB97932.1	39.9	78	146
						62%	3	212
						64%	3	206
						59%	3	200
						54%	3	206
						56%	6	206
						47%	9	212
						42%	3	233
						43%	18	212
						49%	3	191
						40%	21	212
						38%	3	206
						43%	21	191
						40%	3	212
						43%	12	212
						42%	3	149
						42%	3	149
						48%	6	161
						37%	69	212
						36%	3	149
						39%	166	234
						47%	172	234
						38%	172	234
						33%	172	234
						44%	181	234
						50%	181	234
						55%	181	234
						25%	154	234
						50%	181	234

HUPAA60	586675	8604	HMMER 2.1.1	PFAM: Adenosine/AMP deaminase	PF00962	77%	208	234
						44%	181	234
HJBC205	925805	8611	HMMER 1.8	PFAM: TPR Domain	PF00515	12.67	205	291
			blastx.14	(AF132856) suppressor of G2 allele of skp1 homolog [Homo sapiens]	gi4809026 gb AAD3 0062.1	88%	520	840
						98%	85	357
						58%	798	869
						25%	151	258
HHEZO92	942859	8638	HMMER 2.1.1	PFAM: tRNA synthetase class II (G, H, P, S and T)	PF00587	59.7	94	450
			blastx.14	(AC002131) Similar to seryl-tRNA synthetase 1 [Arabidopsis thaliana]	gi3157938 gb AAC1 7621.1	62%	97	306
						47%	325	507
HHEWX06	933879	8643	blastx.14	ORF 3 [Rattus norvegicus]	gi57053 emb CAA29 033.1	32%	38	241
						53%	5	43
HHEPG59	925436	8681	blastx.14	IP63 protein [Rattus norvegicus]	gi2764951 emb CAA 67705.1	58%	251	66
						52%	541	440
						50%	346	257
HHEMG02	917366	8704	blastx.14	similar to NIFS protein (nitrogen fixation) [Caenorhabditis elegans]	gi1722379 gb AAC46 685.1	67%	525	608
						56%	441	488
						53%	641	685
HHELA35	878217	8711	HMMER 2.1.1	PFAM: Beta-lactamase	PF00144	175.4	118	450
HHEKZ12	878267	8712	HMMER 1.8	PFAM: Beta-lactamases	PF00144	132.1	102	380
HHEAJ78	773538	8739	HMMER	PFAM: Helicases	PF00271	3.92	2	82



HHEAA02	932265	8743	1.8	conserved C-terminal domain The ha1438 gene product is related to a C728 protein 1	gi 559715 dbj BAA07556.1	87%	53	445
HFSAG03	960973	8761	HMMER 1.8	PFAM: Helicases conserved C-terminal domain	PF00271	6.39	454	365
HEOOA49	942561	8765	HMMER 2.1.1 blastx.2	PFAM: FAD binding domain Aip2p [Saccharomyces cerevisiae]	PF01565	115.8	1	201
HEONO59	741361	8768	HMMER 2.1.1 blastx.2	PFAM: Fibronectin type III domain (AF117210) host cell factor 2 [Homo sapiens]	PF00041	39.4	508	582
HEONL09	961147	8771	HMMER 1.8	PFAM: Core histones H2A, H2B, H3 and H4 alpha-3 type IX collagen [Homo sapiens]	PF00125	9.17	96	152
HEOMX01	913683	8778	blastx.14		gi 1196421 gb AAC41947.1	40%	349	480
						36%	328	468
						31%	325	468
						27%	316	513
						32%	331	468

HDTJF05	931977	8804	blastx.14	polyprotein [Hepatitis C virus]	gi 464178 dbj BAA03581.1	34%	328	468
						61%	241	279
						35%	328	411
						41%	337	408
						77%	241	267
						63%	241	273
						58%	244	279
						66%	306	332
						35%	185	244
						28%	394	468
						53%	394	438
						47%	168	218
						50%	49	90
						60%	208	237
						75%	258	281
HDTIO74	933606	8805	blastx.14	(AL021749) protein phosphatase 2C-like protein [Arabidopsis thaliana]	gi 2842482 emb CAA16879.1	45%	148	5
HDTIO16	934151	8806	HMMER 2.1.1 blastx.14	PFAM: WD domain, G-beta repeat (AF072880) SOCS box-containing WD protein SW/Ip-1 [Homo sapiens]	PF00400	117.6	164	283
						99%	2	613
						85%	610	672
						70%	686	715
HDTDP02	919572	8831	blastx.14	(AF151872) CGI-114 protein [Homo sapiens]	gi 4929697 gb AAD34109.1 AF151872.1	76%	135	212
HDTDD72	587710	8836	HMMER 1.8	PFAM: ATP synthase A chain	PF00119	85.33	165	350
HDTDB37	587699	8844	HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF00099	2.43	201	218
HDTCC55	934923	8846	blastx.14	(AL117483) hypothetical	gi 5911963 emb CAB	46%	306	389

HDTBD67	899636	8860	HMMER 1.8	protein [Homo sapiens] PFAM: Laminin G domain	55956.1]	46% 35% 42%	453 4 105	542 105 167
HDTBD67	902517	9731	HMMER 1.8	PFAM: Laminin G domain	PF00054	53.09	615	1004
HDTAA31	937609	8871	HMMER 1.8	PFAM: Core histones H2A, H2B, H3 and H4	PF00125	53.23	278	667
HDTAA31	941948	9732	HMMER 1.8	PFAM: Core histones H2A, H2B, H3 and H4	PF00125	12.8	1331	1408
HDPXN01	915919	8899	HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF00099	12.8	1331	1408
HDPUN39	957580	8916	HMMER 2.1.1	PFAM: HECT-domain (ubiquitin-transferase).	PF00632	4.29	99	146
			blastx.14	hypothetical protein 2 - human (fragment)	pir B38919 B38919	197.8	1783	1067
HDPB10	961309	8928	HMMER 2.1.1 blastx.2	PFAM: Zinc finger, C2H2 type	PF00096	66%	1723	1070
				(AF091457) zinc finger protein RIN ZF [Rattus norvegicus]	gb AAD22522.1 AF0 91457_1	32.9	67	135
						61%	1	252
HDPRR24	914667	8932	blastx.14	(AF086837) snapin [Homo sapiens]	gi 4206088 gb AAD1 1417.1]	98%	144	410
HDPRI04	909040	8934	HMMER 2.1.1 blastx.2	PFAM: Zinc finger, C2H2 type	PF00096	52.4	192	263
				zinc finger protein ZNF132 [Homo sapiens]	gb AAC50252.1]	40% 36% 46% 47%	12 12 335 335	377 377 553 553

				47%	335	538
				35%	18	377
				34%	12	377
				41%	335	574
				34%	12	377
				38%	335	574
				31%	12	377
				44%	335	538
				28%	12	377
				43%	335	553
				30%	12	377
				37%	335	574
				31%	12	377
				41%	335	553
				31%	12	377
				49%	380	538
				36%	326	556
				28%	12	377
				30%	39	371
				36%	335	553
				35%	380	571
				37%	335	517
				27%	12	377
				34%	380	553
				33%	380	538
				26%	93	371
				33%	51	194
				36%	513	611
				50%	570	611
				30%	534	611
				69%	573	611

HDPQL68	955006	8939	blastx.14	(AC007258) Putative ATPase [Arabidopsis thaliana]				30%	534	611
								46%	573	611
								46%	573	611
								60%	582	611
								27%	513	599
								34%	303	365
								30%	513	611
								45%	292	354
								46%	573	611
								40%	327	371
								45%	544	576
								45%	544	576
								42%	200	490
								41%	530	646
HDPQF03	923120	8941	blastx.14	mitogen-activated protein kinase kinase (EC 2.7.-.-) 1			gi 5080816 gb AAD3 9325.1 AC007258_14	60%	523	582
							pir JE0363 JE0363	54%	155	187
								85%	700	83
								54%	771	700
								100%	803	774
								66%	823	788
HDPLT62	973945	8959	HMMER 1.8	PFAM: Neurotransmitter- gated ion-channel			PF00065	102.12	417	746
			blastx	GABA receptor rho-3 subunit precursor [Rattus norvegicus]			dbj BAA09322.1	78%	414	797
								92%	262	411
HDPGS45	921381	8989	blastx.14	(AC004893) similar to NEDD-4 (KIA0093); similar to P46934 (PID:g1171682) [Homo sapiens]			gi 3694664 gb AAC6 2434.1	87%	366	226
HDPGS16	909833	8991	HMMER	PFAM: Protein kinase C			PF00433	57.51	287	445

			1.8	terminal domain (AJ245709) Akt-3 protein [Homo sapiens]	emb CAB5537.1			
HDPFZ70	709684	9003	blastx.2	PFAM: Core histones H2A, H2B, H3 and H4	PF00125	100%	236	460
HDPFB03	936331	9015	HMMER 1.8	(AF043726) PHD-finger protein [Mus musculus]	gi 4529845 gb AAD2 1792.1	100%	3	116
HDPDD12	970592	9017	blastx.14	(AF000998) CLOCK [Mus musculus]	gi 2114488 gb AAC5 3200.1	13.5	662	745
HDPDM62	454740	9031	HMMER 1.8	PFAM: Laminin B (Domain IV)	PF00052	38%	341	553
HCWKR86	784705	9089	HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF00099	86%	284	370
HCWFA35	908820	9114	HMMER 1.8	PFAM: DnaI, prokaryotic heat shock protein	PF00226	2.03	152	208
			blastx.14	Curved DNA-binding protein cbpA [Escherichia coli]	gi 1651491 dbj BAA3 6142.1	2.26	296	340
HCUGN19	716989	9181	HMMER 1.8	PFAM: Alcohol/other dehydrogenases, short chain type	PF00106	116.61	80	274
HCUGL20	668913	9184	HMMER 1.8	PFAM: Ank repeat	PF00023	98%	68	364
HCENG10	848225	9310	HMMER 1.8	PFAM: HMG (high mobility group) box	PF00505	8.05	98	151
HCFMZ90	922112	9315	HMMER 1.8	PFAM: Beta-ketoacyl synthases	PF00109	7.2	190	261
			blastx.14	(AF021234) 3-oxoacyl- [acyl-carrier-protein]- synthase [Neurospora]	gi 2522482 gb AAB8 1078.1	6.03	305	376
						194.57	291	872
						57%	465	824
						56%	255	494
						41%	91	306

HCFMW71	920506	9316	HMMER 2.1.1	crassa PFAM: Isopenicillin- diphosphate delta- isomerase	PF01772	55.5	198	362
HCFMJ37	955281	9321	blastx.14	homologue of yeast IPP isomerase [Homo sapiens]	gi 488750 emb CAA3 4890.1	42%	198	407
HCFMG23	850426	9337	blastx.2	(AF161445) HSPC327 [Homo sapiens]	gb AAAF29005.1 AF1 61445_1	62% 89% 95% 100%	95 203 18 610	199
HBTAE84	781946	9355	HMMER 1.8	PFAM: Core histones H2A, H2B, H3 and H4	PF00125	10.89	179	244
HBMTB85	923730	9390	HMMER 1.8	PFAM: ATPases associated with various cellular activities (AAA)	PF00004	20.81	122	232
HBMDF89	912789	9415	blastx.14	(AF003403) 2-amino-3- ketobutyrate-coenzyme A ligase [Mus musculus]	gi 4093159 gb AAC9 9774.1	93% 100% 100%	3 261 217	182 317 258
HBJNB52	726475	9423	blastx.14	Rab24 protein [Mus musculus]	gi 438164 emb CAA8 0472.1	95% 89%	287 96	412 152
HBJLR37	849633	9437	HMMER 1.8	PFAM: Phorbol esters / diacylglycerol binding domain	PF00130	3.77	193	252
HBJLR31	900883	9438	HMMER 2.1.1	PFAM: Ribosomal protein S26e	PF01283	232.2	2	325
HBJJX53	835733	9452	HMMER 2.1.1	PFAM: Zinc finger, C2H2 type	PF00096	90	798	866
			blastx.2	(AF185576) POZ/zinc finger transcription factor ODA-8 [Mus musculus]	gb AAAF03152.1 AF1 85576_1	68% 33% 36%	606 618 66	953 893 185
			HMMER	PFAM: IG	PF00047	9.2	157	207

			1.8	(immunoglobulin) superfamily				
HB/JT12	894345	9453	blastx.2	(AF161081) activatory receptor PIR1beta [Homo sapiens]	gb AADS2965.1 AF1 61081_1	90% 73%	157 215	216 283
HB/JH60	930448	9461	HMMER 2.1.1	PFAM: Homeobox domain	PF00046	64	201	371
HB/JHX73	971377	9466	HMMER 1.8	PFAM: Laminin B (Domain IV)	PF00052	1.57	181	204
			HMMER 1.8	PFAM: Laminin G domain	PF00054	13.48	931	1005
			blastx.14	contactin associated protein [Homo sapiens]	gi 1857708 gb AAB4 8481.1	50% 59% 33% 42% 43%	451 880 349 985 916	876 975 447 1041 963
HB/JGT03	923800	9472	HMMER 1.8	PFAM: Cyclic nucleotide- binding domain	PF00027	8.96	41	100
HB/JFC23	423885	9484	HMMER 2.1.1	PFAM: WD domain, G- beta repeat	PF00400	32.1	135	251
HB/JAB15	660552	9522	HMMER 1.8	PFAM: Phorbol esters / diacylglycerol binding domain	PF00130	2.72	145	171
HBDAD64	864344	9524	HMMER 1.8	PFAM: Zinc-binding metalloprotease domain	PF00099	3.09	423	443
HBCCJ05	930956	9527	blastx.14	(AF164612) Gag protein [Homo sapiens]	gi 5802816 gb AAD5 1794.1 AF164612.1	48% 47%	444 536	277 486
HBCBN51	952057	9532	HMMER 2.1.1	PFAM: alpha/beta hydrolase fold	PF00561	43.4	358	564
			blastx.14	similar to alpha/beta	gi 3878848 emb CAB	40%	741	1007





[053] Table 2 further characterizes certain encoded polypeptides of the invention, by providing the results of comparisons to protein and protein family databases. The first column provides a unique clone identifier, "Clone ID NO:", corresponding to a cDNA clone disclosed in Table 1A. The second column provides the unique contig identifier, "Contig ID:" which allows correlation with the information in Table 1A. The third column provides the sequence identifier, "SEQ ID NO:X", for the contig polynucleotide sequences. The fourth column provides the analysis method by which the homology/identity disclosed in the row was determined. The fifth column provides a description of PFam/NR hits having significant matches identified by each analysis. Column six provides the accession number of the PFam/NR hit disclosed in the fifth column. Column seven, "Score/Percent Identity", provides a quality score or the percent identity, of the hit disclosed in column five. Comparisons were made between polypeptides encoded by polynucleotides of the invention and a non-redundant protein database (herein referred to as "NR"), or a database of protein families (herein referred to as "PFam"), as described below.

[054] The NR database, which comprises the NBRF PIR database, the NCBI GenPept database, and the SIB SwissProt and TrEMBL databases, was made non-redundant using the computer program nrdb2 (Warren Gish, Washington University in Saint Louis). Each of the polynucleotides shown in Table 1A, column 3 (e.g., SEQ ID NO:X or the 'Query' sequence) was used to search against the NR database. The computer program BLASTX was used to compare a 6-frame translation of the Query sequence to the NR database (for information about the BLASTX algorithm please see Altshul et al., J. Mol. Biol. 215:403-410 (1990), and Gish et al., Nat. Genet. 3:266-272 (1993)). A description of the sequence that is most similar to the Query sequence (the highest scoring 'Subject') is shown in column five of Table 2 and the database accession number for that sequence is provided in column six. The highest scoring 'Subject' is reported in Table 2 if (a) the estimated probability that the match occurred by chance alone is less than  $1.0e-07$ , and (b) the match was not to a known repetitive element. BLASTX returns alignments of short polypeptide segments of the Query and Subject sequences which share a high degree of similarity; these segments are known as High-Scoring Segment Pairs or HSPs. Table 2 reports the degree of similarity between the Query and the Subject for each HSP as a percent identity in Column 7. The percent

identity is determined by dividing the number of exact matches between the two aligned sequences in the HSP, dividing by the number of Query amino acids in the HSP and multiplying by 100. The polynucleotides of SEQ ID NO:X which encode the polypeptide sequence that generates an HSP are delineated by columns 8 and 9 of Table 2.

[055] The PFam database, PFam version 5.2, (Sonnhammer et al., Nucl. Acids Res., 26:320-322, (1998)) consists of a series of multiple sequence alignments; one alignment for each protein family. Each multiple sequence alignment is converted into a probability model called a Hidden Markov Model, or HMM, that represents the position-specific variation among the sequences that make up the multiple sequence alignment (see, e.g., R. Durbin et al., *Biological sequence analysis: probabilistic models of proteins and nucleic acids*, Cambridge University Press, 1998 for the theory of HMMs). The program HMMER version 1.8 (Sean Eddy, Washington University in Saint Louis) was used to compare the predicted protein sequence for each Query sequence (SEQ ID NO:Y in Table 1A) to each of the HMMs derived from PFam version 5.2. A HMM derived from PFam version 5.2 was said to be a significant match to a polypeptide of the invention if the score returned by HMMER 1.8 was greater than 0.8 times the HMMER 1.8 score obtained with the most distantly related known member of that protein family. The description of the PFam family which shares a significant match with a polypeptide of the invention is listed in column 5 of Table 2, and the database accession number of the PFam hit is provided in column 6. Column 7 provides the score returned by HMMER version 1.8 for the alignment. Columns 8 and 9 delineate the polynucleotides of SEQ ID NO:X which encode the polypeptide sequence which shows a significant match to a PFam protein family.

[056] As mentioned, columns 8 and 9 in Table 2, "NT From" and "NT To", delineate the polynucleotides of "SEQ ID NO:X" that encode a polypeptide having a significant match to the PFam/NR database as disclosed in the fifth column of Table 2. In one embodiment, the invention provides a protein comprising, or alternatively consisting of, a polypeptide encoded by the polynucleotides of SEQ ID NO:X delineated in columns 8 and 9 of Table 2. Also provided are polynucleotides encoding such proteins, and the complementary strand thereto.

[057] The nucleotide sequence SEQ ID NO:X and the translated SEQ ID NO:Y are sufficiently accurate and otherwise suitable for a variety of uses well known in the art and described further below. For instance, the nucleotide sequences of SEQ ID NO:X are useful for designing nucleic acid hybridization probes that will detect nucleic acid sequences contained in SEQ ID NO:X or the cDNA contained in Clone ID NO:Z. These probes will also hybridize to nucleic acid molecules in biological samples, thereby enabling immediate applications in chromosome mapping, linkage analysis, tissue identification and/or typing, and a variety of forensic and diagnostic methods of the invention. Similarly, polypeptides identified from SEQ ID NO:Y may be used to generate antibodies which bind specifically to these polypeptides, or fragments thereof, and/or to the polypeptides encoded by the cDNA clones identified in, for example, Table 1A.

[058] Nevertheless, DNA sequences generated by sequencing reactions can contain sequencing errors. The errors exist as misidentified nucleotides, or as insertions or deletions of nucleotides in the generated DNA sequence. The erroneously inserted or deleted nucleotides cause frame shifts in the reading frames of the predicted amino acid sequence. In these cases, the predicted amino acid sequence diverges from the actual amino acid sequence, even though the generated DNA sequence may be greater than 99.9% identical to the actual DNA sequence (for example, one base insertion or deletion in an open reading frame of over 1000 bases).

[059] Accordingly, for those applications requiring precision in the nucleotide sequence or the amino acid sequence, the present invention provides not only the generated nucleotide sequence identified as SEQ ID NO:X, and a predicted translated amino acid sequence identified as SEQ ID NO:Y, but also a sample of plasmid DNA containing cDNA Clone ID NO:Z (deposited with the ATCC on October 5, 2000, and receiving ATCC designation numbers PTA 2574 and PTA 2575; deposited with the ATCC on January 5, 2001, having the depositor reference numbers TS-1, TS-2, AC-1, and AC-2; and/or as set forth, for example, in Table 1A, 6 and 7). The nucleotide sequence of each deposited clone can readily be determined by sequencing the deposited clone in accordance with known methods. Further, techniques known in the art can be used to verify the nucleotide sequences of SEQ ID NO:X.

[060] The predicted amino acid sequence can then be verified from such deposits. Moreover, the amino acid sequence of the protein encoded by a particular clone can also be directly determined by peptide sequencing or by expressing the protein in a suitable host cell containing the deposited human cDNA, collecting the protein, and determining its sequence.

*RACE Protocol For Recovery of Full-Length Genes*

[061] Partial cDNA clones can be made full-length by utilizing the rapid amplification of cDNA ends (RACE) procedure described in Frohman, M.A., et al., Proc. Nat'l. Acad. Sci. USA, 85:8998-9002 (1988). A cDNA clone missing either the 5' or 3' end can be reconstructed to include the absent base pairs extending to the translational start or stop codon, respectively. In some cases, cDNAs are missing the start codon of translation. The following briefly describes a modification of this original 5' RACE procedure. Poly A+ or total RNA is reverse transcribed with Superscript II (Gibco/BRL) and an antisense or complementary primer specific to the cDNA sequence. The primer is removed from the reaction with a Microcon Concentrator (Amicon). The first-strand cDNA is then tailed with dATP and terminal deoxynucleotide transferase (Gibco/BRL). Thus, an anchor sequence is produced which is needed for PCR amplification. The second strand is synthesized from the dA-tail in PCR buffer, Taq DNA polymerase (Perkin-Elmer Cetus), an oligo-dT primer containing three adjacent restriction sites (XhoI, SalI and ClaI) at the 5' end and a primer containing just these restriction sites. This double-stranded cDNA is PCR amplified for 40 cycles with the same primers as well as a nested cDNA-specific antisense primer. The PCR products are size-separated on an ethidium bromide-agarose gel and the region of gel containing cDNA products the predicted size of missing protein-coding DNA is removed. cDNA is purified from the agarose with the Magic PCR Prep kit (Promega), restriction digested with XhoI or SalI, and ligated to a plasmid such as pBluescript SKII (Stratagene) at XhoI and EcoRV sites. This DNA is transformed into bacteria and the plasmid clones sequenced to identify the correct protein-coding inserts. Correct 5' ends are confirmed by comparing this sequence with the putatively identified homologue and overlap with the partial cDNA clone. Similar methods known in the art and/or commercial kits are used to amplify and recover 3' ends.

- [062] Several quality-controlled kits are commercially available for purchase. Similar reagents and methods to those above are supplied in kit form from Gibco/BRL for both 5' and 3' RACE for recovery of full length genes. A second kit is available from Clontech which is a modification of a related technique, SLIC (single-stranded ligation to single-stranded cDNA), developed by Dumas et al., *Nucleic Acids Res.*, 19:5227-32 (1991). The major differences in procedure are that the RNA is alkaline hydrolyzed after reverse transcription and RNA ligase is used to join a restriction site-containing anchor primer to the first-strand cDNA. This obviates the necessity for the dA-tailing reaction which results in a polyT stretch that is difficult to sequence past.
- [063] An alternative to generating 5' or 3' cDNA from RNA is to use cDNA library double-stranded DNA. An asymmetric PCR-amplified antisense cDNA strand is synthesized with an antisense cDNA-specific primer and a plasmid-anchored primer. These primers are removed and a symmetric PCR reaction is performed with a nested cDNA-specific antisense primer and the plasmid-anchored primer.

*RNA Ligase Protocol For Generating The 5' or 3' End Sequences To Obtain Full Length Genes*

- [064] Once a gene of interest is identified, several methods are available for the identification of the 5' or 3' portions of the gene which may not be present in the original cDNA plasmid. These methods include, but are not limited to, filter probing, clone enrichment using specific probes and protocols similar and identical to 5' and 3' RACE. While the full length gene may be present in the library and can be identified by probing, a useful method for generating the 5' or 3' end is to use the existing sequence information from the original cDNA to generate the missing information. A method similar to 5' RACE is available for generating the missing 5' end of a desired full-length gene. (This method was published by Fromont-Racine et al., *Nucleic Acids Res.*, 21(7):1683-1684 (1993)). Briefly, a specific RNA oligonucleotide is ligated to the 5' ends of a population of RNA presumably containing full-length gene RNA transcript. A primer set containing a primer specific to the ligated RNA oligonucleotide and a primer specific to a known sequence of the gene of interest, is used to PCR amplify the 5' portion of the desired full length gene which may then be sequenced and used to generate the full length gene. This method starts with total RNA isolated from the desired source, poly A RNA may be

used but is not a prerequisite for this procedure. The RNA preparation may then be treated with phosphatase if necessary to eliminate 5' phosphate groups on degraded or damaged RNA which may interfere with the later RNA ligase step. The phosphatase, if used, is then inactivated and the RNA is treated with tobacco acid pyrophosphatase in order to remove the cap structure present at the 5' ends of messenger RNAs. This reaction leaves a 5' phosphate group at the 5' end of the cap cleaved RNA which can then be ligated to an RNA oligonucleotide using T4 RNA ligase. This modified RNA preparation can then be used as a template for first strand cDNA synthesis using a gene specific oligonucleotide. The first strand synthesis reaction can then be used as a template for PCR amplification of the desired 5' end using a primer specific to the ligated RNA oligonucleotide and a primer specific to the known sequence of the immune/hematopoietic antigen of interest. The resultant product is then sequenced and analyzed to confirm that the 5' end sequence belongs to the relevant immune/hematopoietic antigen.

[065] The present invention also relates to vectors or plasmids which include such DNA sequences, as well as the use of the DNA sequences. The material deposited with the ATCC (deposited with the ATCC on October 5, 2000, and receiving ATCC designation numbers PTA 2574 and PTA 2575; deposited with the ATCC on January 5, 2001, having the depositor reference numbers TS-1, TS-2, AC-1, and AC-2; and/or as set forth, for example, in Table 1A, 6 and 7) is a mixture of cDNA clones derived from a variety of human tissue and cloned in either a plasmid vector or a phage vector, as shown, for example, in Table 7. These deposits are referred to as "the deposits" herein. The tissues from which some of the clones were derived are listed in Table 7, and the vector in which the corresponding cDNA is contained is also indicated in Table 7. The deposited material includes cDNA clones corresponding to SEQ ID NO:X described, for example, in Table 1A (Clone ID NO:Z). A clone which is isolatable from the ATCC Deposits by use of a sequence listed as SEQ ID NO:X, may include the entire coding region of a human gene or in other cases such clone may include a substantial portion of the coding region of a human gene. Furthermore, although the sequence listing may in some instances list only a portion of the DNA sequence in a clone included in the ATCC Deposits, it is well within the ability of one skilled in the art to sequence the DNA included in a clone contained in the ATCC Deposits by use of a sequence (or portion

thereof) described in, for example Tables 1A or 2 by procedures hereinafter further described, and others apparent to those skilled in the art.

[066] Also provided in Table 7 is the name of the vector which contains the cDNA clone. Each vector is routinely used in the art. The following additional information is provided for convenience.

[067] Vectors Lambda Zap (U.S. Patent Nos. 5,128,256 and 5,286,636), Uni-Zap XR (U.S. Patent Nos. 5,128,256 and 5,286,636), Zap Express (U.S. Patent Nos. 5,128,256 and 5,286,636), pBluescript (pBS) (Short, J. M. et al., *Nucleic Acids Res.* 16:7583-7600 (1988); Altling-Mees, M. A. and Short, J. M., *Nucleic Acids Res.* 17:9494 (1989)) and pBK (Altling-Mees, M. A. et al., *Strategies* 5:58-61 (1992)) are commercially available from Stratagene Cloning Systems, Inc., 11011 N. Torrey Pines Road, La Jolla, CA, 92037. pBS contains an ampicillin resistance gene and pBK contains a neomycin resistance gene. Phagemid pBS may be excised from the Lambda Zap and Uni-Zap XR vectors, and phagemid pBK may be excised from the Zap Express vector. Both phagemids may be transformed into *E. coli* strain XL-1 Blue, also available from Stratagene.

[068] Vectors pSport1, pCMVSPORT 1.0, pCMVSPORT 2.0 and pCMVSPORT 3.0, were obtained from Life Technologies, Inc., P. O. Box 6009, Gaithersburg, MD 20897. All Sport vectors contain an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, also available from Life Technologies. See, for instance, Gruber, C. E., et al., *Focus* 15:59- (1993). Vector lacmid BA (Bento Soares, Columbia University, New York, NY) contains an ampicillin resistance gene and can be transformed into *E. coli* strain XL-1 Blue. Vector pCR<sup>®</sup>2.1, which is available from Invitrogen, 1600 Faraday Avenue, Carlsbad, CA 92008, contains an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, available from Life Technologies. See, for instance, Clark, J. M., *Nuc. Acids Res.* 16:9677-9686 (1988) and Mead, D. et al., *Bio/Technology* 9: (1991).

[069] The present invention also relates to the genes corresponding to SEQ ID NO:X, SEQ ID NO:Y, and/or the deposited clone (Clone ID NO:Z). The corresponding gene can be isolated in accordance with known methods using the sequence information disclosed herein. Such methods include preparing probes or primers from the disclosed



sequence and identifying or amplifying the corresponding gene from appropriate sources of genomic material.

[070] Also provided in the present invention are allelic variants, orthologs, and/or species homologs. Procedures known in the art can be used to obtain full-length genes, allelic variants, splice variants, full-length coding portions, orthologs, and/or species homologs of immune/hematopoietic associated genes corresponding to SEQ ID NO:X or the complement thereof, polypeptides encoded by SEQ ID NO:X or the complement thereof, and/or the cDNA contained in Clone ID NO:Z, using information from the sequences disclosed herein or the clones deposited with the ATCC. For example, allelic variants and/or species homologs may be isolated and identified by making suitable probes or primers from the sequences provided herein and screening a suitable nucleic acid source for allelic variants and/or the desired homologue.

[071] The polypeptides of the invention can be prepared in any suitable manner. Such polypeptides include isolated naturally occurring polypeptides, recombinantly produced polypeptides, synthetically produced polypeptides, or polypeptides produced by a combination of these methods. Means for preparing such polypeptides are well understood in the art.

[072] The polypeptides may be in the form of the secreted protein, including the mature form, or may be a part of a larger protein, such as a fusion protein (see below). It is often advantageous to include an additional amino acid sequence which contains secretory or leader sequences, pro-sequences, sequences which aid in purification, such as multiple histidine residues, or an additional sequence for stability during recombinant production.

[073] The polypeptides of the present invention are preferably provided in an isolated form, and preferably are substantially purified. A recombinantly produced version of a polypeptide, including the secreted polypeptide, can be substantially purified using techniques described herein or otherwise known in the art, such as, for example, by the one-step method described in Smith and Johnson, *Gene* 67:31-40 (1988). Polypeptides of the invention also can be purified from natural, synthetic or recombinant sources using techniques described herein or otherwise known in the art, such as, for example, antibodies of the invention raised against the immune/hematopoietic polypeptides of the present invention in methods which are well known in the art.

[074] The present invention provides a polynucleotide comprising, or alternatively consisting of, the nucleic acid sequence of SEQ ID NO:X, and/or the cDNA sequence contained in Clone ID NO:Z. The present invention also provides a polypeptide comprising, or alternatively, consisting of, the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X or a complement thereof, a polypeptide encoded by the cDNA contained in Clone ID NO:Z, and/or the polypeptide sequence encoded by a nucleotide sequence in SEQ ID NO:B as defined in column 6 of Table 1B. Polynucleotides encoding a polypeptide comprising, or alternatively consisting of the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X, a polypeptide encoded by the cDNA contained in Clone ID NO:Z and/or a polypeptide sequence encoded by a nucleotide sequence in SEQ ID NO:B as defined in column 6 of Table 1B are also encompassed by the invention. The present invention further encompasses a polynucleotide comprising, or alternatively consisting of, the complement of the nucleic acid sequence of SEQ ID NO:X, a nucleic acid sequence encoding a polypeptide encoded by the complement of the nucleic acid sequence of SEQ ID NO:X, and/or the cDNA contained in Clone ID NO:Z.

[075] Moreover, representative examples of polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the sequences delineated in Table 1B column 6, or any combination thereof. Additional, representative examples of polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the complementary strand(s) of the sequences delineated in Table 1B column 6, or any combination thereof. In further embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in Table 1B, column 6, and have a nucleic acid sequence which is different from that of the BAC fragment having the sequence disclosed in SEQ ID NO:B (see Table 1B, column 5). In additional embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in Table 1B, column 6, and have a nucleic acid sequence which is different from that published for the BAC clone identified as BAC ID NO:A (see Table 1B, column 4). In additional embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in Table 1B, column 6, and have a nucleic

acid sequence which is different from that contained in the BAC clone identified as BAC ID NO:A (see Table 1B, column 4). Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides and polypeptides are also encompassed by the invention.

[076] Further, representative examples of polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the sequences delineated in column 6 of Table 1B which correspond to the same Clone ID NO:Z (see Table 1B, column 1), or any combination thereof. Additional, representative examples of polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the complementary strand(s) of the sequences delineated in column 6 of Table 1B which correspond to the same Clone ID NO:Z (see Table 1B, column 1), or any combination thereof. In further embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in column 6 of Table 1B which correspond to the same Clone ID NO:Z (see Table 1B, column 1) and have a nucleic acid sequence which is different from that of the BAC fragment having the sequence disclosed in SEQ ID NO:B (see Table 1B, column 5). In additional embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in column 6 of Table 1B which correspond to the same Clone ID NO:Z (see Table 1B, column 1) and have a nucleic acid sequence which is different from that published for the BAC clone identified as BAC ID NO:A (see Table 1B, column 4). In additional embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in column 6 of Table 1B which correspond to the same Clone ID NO:Z (see Table 1B, column 1) and have a nucleic acid sequence which is different from that contained in the BAC clone identified as BAC ID NO:A (see Table 1B, column 4). Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides and polypeptides are also encompassed by the invention.

[077] Further, representative examples of polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the sequences delineated in column 6 of Table 1B which correspond to the same contig sequence identifier SEQ ID NO:X (see Table 1B, column 2), or any combination thereof. Additional, representative examples of polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the complementary strand(s) of the sequences delineated in column 6 of Table 1B which correspond to the same contig sequence identifier SEQ ID NO:X (see Table 1B, column 2), or any combination thereof. In further embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in column 6 of Table 1B which correspond to the same contig sequence identifier SEQ ID NO:X (see Table 1B, column 2) and have a nucleic acid sequence which is different from that of the BAC fragment having the sequence disclosed in SEQ ID NO:B (see Table 1B, column 5). In additional embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in column 6 of Table 1B which correspond to the same contig sequence identifier SEQ ID NO:X (see Table 1B, column 2) and have a nucleic acid sequence which is different from that published for the BAC clone identified as BAC ID NO:A (see Table 1B, column 4). In additional embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in column 6 of Table 1B which correspond to the same contig sequence identifier SEQ ID NO:X (see Table 1B, column 2) and have a nucleic acid sequence which is different from that contained in the BAC clone identified as BAC ID NO:A (See Table 1B, column 4). Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides and polypeptides are also encompassed by the invention.

[078] Moreover, representative examples of polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the sequences delineated in the same row of Table 1B column 6, or any combination thereof. Additional, representative examples of polynucleotides of the

invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the complementary strand(s) of the sequences delineated in the same row of Table 1B column 6, or any combination thereof. In preferred embodiments, the polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the complementary strand(s) of the sequences delineated in the same row of Table 1B column 6, wherein sequentially delineated sequences in the table (i.e. corresponding to those exons located closest to each other) are directly contiguous in a 5' to 3' orientation. In further embodiments, above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in the same row of Table 1B, column 6, and have a nucleic acid sequence which is different from that of the BAC fragment having the sequence disclosed in SEQ ID NO:B (see Table 1B, column 5). In additional embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in the same row of Table 1B, column 6, and have a nucleic acid sequence which is different from that published for the BAC clone identified as BAC ID NO:A (see Table 1B, column 4). In additional embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in the same row of Table 1B, column 6, and have a nucleic acid sequence which is different from that contained in the BAC clone identified as BAC ID NO:A (see Table 1B, column 4). Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention.

[079] In additional specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the sequences delineated in column 6 of Table 1B, and the polynucleotide sequence of SEQ ID NO:X (e.g., as defined in Table 1B, column 2) or fragments or variants thereof. Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention.

[080] In additional specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the sequences delineated in column 6 of Table 1B which correspond to

the same Clone ID NO:Z (see Table 1B, column 1), and the polynucleotide sequence of SEQ ID NO:X (e.g., as defined in Table 1A or 1B) or fragments or variants thereof. In preferred embodiments, the delineated sequence(s) and polynucleotide sequence of SEQ ID NO:X correspond to the same Clone ID NO:Z. Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention.

[081] In further specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the sequences delineated in the same row of column 6 of Table 1B, and the polynucleotide sequence of SEQ ID NO:X (e.g., as defined in Table 1A or 1B) or fragments or variants thereof. In preferred embodiments, the delineated sequence(s) and polynucleotide sequence of SEQ ID NO:X correspond to the same row of column 6 of Table 1B. Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention.

[082] In additional specific embodiments, polynucleotides of the invention comprise, or alternatively consist of a polynucleotide sequence in which the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1B and the 5' 10 polynucleotides of the sequence of SEQ ID NO:X are directly contiguous. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

[083] In additional specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, a polynucleotide sequence in which the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1B and the 5' 10 polynucleotides of a fragment or variant of the sequence of SEQ ID NO:X are directly contiguous. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower

stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

[084] In specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, a polynucleotide sequence in which the 3' 10 polynucleotides of the sequence of SEQ ID NO:X and the 5' 10 polynucleotides of the sequence of one of the sequences delineated in column 6 of Table 1B are directly contiguous. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

[085] In specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, a polynucleotide sequence in which the 3' 10 polynucleotides of a fragment or variant of the sequence of SEQ ID NO:X and the 5' 10 polynucleotides of the sequence of one of the sequences delineated in column 6 of Table 1B are directly contiguous. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides, are also encompassed by the invention.

[086] In further specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, a polynucleotide sequence in which the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1B and the 5' 10

polynucleotides of another sequence in column 6 are directly contiguous. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

[087] In specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, a polynucleotide sequence in which the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1B and the 5' 10 polynucleotides of another sequence in column 6 corresponding to the same Clone ID NO:Z (see Table 1B, column 1) are directly contiguous. Nucleic acids which hybridize to the complement of these 20 lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

[088] In specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, a polynucleotide sequence in which the 3' 10 polynucleotides of one sequence in column 6 corresponding to the same contig sequence identifier SEQ ID NO:X (see Table 1B, column 2) are directly contiguous. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

[089] In specific embodiments, polynucleotides of the invention comprise, or alternatively consist of a polynucleotide sequence in which the 3' 10 polynucleotides of



one of the sequences delineated in column 6 of Table 1B and the 5' 10 polynucleotides of another sequence in column 6 corresponding to the same row are directly contiguous. In preferred embodiments, the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1B is directly contiguous with the 5' 10 polynucleotides of the next sequential exon delineated in Table 1B, column 6. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

[090] Many polynucleotide sequences, such as EST sequences, are publicly available and accessible through sequence databases and may have been publicly available prior to conception of the present invention. Preferably, such related polynucleotides are specifically excluded from the scope of the present invention. Accordingly, for each contig sequence (SEQ ID NO:X) listed in the third column of Table 1A, preferably excluded are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 and the final nucleotide minus 15 of SEQ ID NO:X, b is an integer of 15 to the final nucleotide of SEQ ID NO:X, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:X, and where b is greater than or equal to a + 14. More specifically, preferably excluded are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b; where a and b are integers as defined in columns 4 and 5, respectively, of Table 3. In specific embodiments, the polynucleotides of the invention do not consist of at least one, two, three, four, five, ten, or more of the specific polynucleotide sequences referenced by the Genbank Accession No. as disclosed in column 6 of Table 3 (including for example, published sequence in connection with a particular BAC clone). In further embodiments, preferably excluded from the invention are the specific polynucleotide sequence(s) contained in the clones corresponding to at least one, two, three, four, five, ten; or more of the available material having the accession numbers identified in the sixth column of this Table (including for

example, the actual sequence contained in an identified BAC clone). In no way is this listing meant to encompass all of the sequences which may be excluded by the general formula, it is just a representative example. All references available through these accessions are hereby incorporated by reference in their entirety.

**TABLE 3**

Clone ID NO.: Z	SEQ ID NO:	Contig ID:	EST Disclaimer Range of a 1 - 3744	Accession #'s
HAMHB21	11	901376	15 - 3758	A1760827, AW408019, A1253155, AB493666, AT356482, AA814034, AW075920, AW407984, AT760691, AA251937, AT766650, AA352825, AA243541, AI934100, AA352840, H72208, H72106, AW193021, AL035530, AL035530, and AL035530.
HASAX16	12	573692	15 - 319	AL356513, AL356513, AL358796, and AL358796.
HASAY74	13	526312	15 - 389	AC006479, AC006479, AC006479, and AC006479.
HASAY89	14	958768	15 - 863	AD40823, AC012580, AC012580, AC012580, AL133502, and AL133502.
HASAY94	15	521835	15 - 103	AL133216, AC024998, AC024998, AL365438, AL365438, AL365438, AL365438, AL365438, AL365438, AL133216, AL133216, AC022702, AC022702, AC022702, AC022702, AC025796, AF198096, AF198096, and AF198096.
HBCAL36	16	931477	15 - 567	AB908374.
HBCAL39	17	964871	15 - 601	AL117337, AF205588, AL022345, AL022345, AL161931, AL161931, AL161931, AL161931, AL354975, AL354975, AL355583, AL355583, AL355583, AL355583, AL355583, AL355583, AF205588, AF205588, AF205588, AL117337, and AL117337.
HBCAM74	18	864366	15 - 451	AA642815.
HBCAR79	19	573989	15 - 429	AC021215.
HBCAS69	20	669802	15 - 288	AI150061, AA382210, AC011448, and AC011448.
HBCAT17	21	503573	15 - 399	AI114477, AL133243, AL133243, AL133243, and AL133243.
HBCAT63	22	573993	15 - 224	AI114477, AL133243, AL133243, AL133243, and AL133243.
HBCBM52	23	932514	15 - 671	AB023431, AC005954, AC005954, and AC0068475.
HBCBX12	24	861018	15 - 233	
HBCBZ05	25	927800	15 - 727	
HBDAC79	26	935414	15 - 626	AA904376, H23157, AA663798, AA359944, AA448036, R61429, H09004, AA309011, AF126245, AP001785, and AP001785.
HBDAD04	27	614849	15 - 389	AI057188, AW273323, C15735, AP932257, AJ040493, AW043720, AW021811, AA858079, AV197210, AT791278, AA508647, C15853, AA181800, AW043729, AV0080982, AI189922, AI985340, AA031428, AA282285, AC007392, Z82198, AL031121, AL121840, L24095, AC004882, AC005529, AC002070, AC008984, AL132985, AL049781, Z72006, AC005881, AL079305, AP000263, AC005888, AC003080, AC004935, AL035667, AC005610, AP000036, AC005186, AC004842, AL035696, AC003661, AC004503, AC009263, AL025581, AC003099, U41096, AL021368, AP000567, AC004933, AC003975, AP000494, AL008638, AF015262, AL049833, AL034350, AL031010, AJ229043, AP001069, AC006288, AL049561, AL024507, AP000100, AC005792, AP000566, AL023283, 2011594, AC006377

HBDAF51	28	725481	1-496	15-510	AL031684, AC008014, AP001038, AF064864, AP001037, AF165176, AC005993, AP001043, AL078602, AC007073, AL133512, AC005367, AC007751, AC004850, AC006928, AC009028, Z83823, AC003089, AL008715, AC007372, AL049837, AL078612, AF124730, AC006032, AF207955, AC008154, AL021395, AC005076, AC005886, AC008072, AC005036, AC004783, AC004002, AC006256, AL133485, AC006353, AC002485, AF205890, AC004106, AC004169, Z74696, AC006263, AC006384, AC006972, AL031767, AC006368, AC004158, and Z95152.
HBDAF51	28	725481	1-496	15-510	N47629.
HBDAF61	29	864338	1-794	15-808	AC003963.
HBAB59	30	557972	1-425	15-439	
HBAC23	31	529753	1-234	15-248	AA313748, AC008013, AC006432, and Z61963.
HBAG72	32	722723	1-504	15-518	
HBAA91	33	677397	1-307	15-321	
HBAA75	34	953840	1-301	15-315	AL133163.
HBAAJ85	35	675904	1-105	15-119	AC002450.
HBAAV57	36	527998	1-387	15-401	AC004976.
HBAAV76	37	527908	1-286	15-300	
HBAAV91	38	828026	1-276	15-290	
HBABM14	39	781398	1-306	15-320	
HBABR94	40	527903	1-331	15-345	
HBABU55	41	527112	1-349	15-363	
HBBCD43	42	714390	1-187	15-201	
HBBCD88	43	697628	1-446	15-460	
HBBC168	44	823468	1-216	15-230	
HBBCO81	45	527111	1-290	15-304	
HBBCR51	46	847946	1-327	15-341	AA766781, and AA352756.
HBBCR90	47	527702	1-318	15-332	
HBBDL73	48	531104	1-218	15-232	
HBBDN14	49	856216	1-401	15-415	AL117593, and AC007401.
HBBD070	50	752830	1-523	15-537	AA249870, and AF205935.
HBBDP32	51	573846	1-263	15-277	
HBBDP41	52	494836	1-374	15-388	
HBBDQ75	53	847935	1-516	15-530	
HBBDT05	54	932302	1-86	15-100	
HBBDT47	55	573728	1-214	15-228	
HBBDW23	56	919383	1-447	15-461	AL078584.
HBBDW36	57	573847	1-498	15-512	

HB/DX18	58	795732	1 - 544	15 - 558	T94994, and AC007546.
HB/DX51	59	716395	1 - 391	15 - 405	
HB/JEA22	60	674872	1 - 312	15 - 326	
HB/JEA25	61	589249	1 - 498	15 - 512	AA912740, AA488771, T99916, AA370641, AA376428, AA488991, AA091598, D81695, AA305205, AA053093, A082436, AA779219, A041880, A1652229, A1216294, A1037847, AA319426, AA224141, AV392797, A1240672, AA160646, AW403677, A1037869, A1240700, AA314410, U91327, AF026293, and AF026166.
HB/JEA44	62	973376	1 - 447	15 - 461	T86098, and A1031589.
HB/JEA65	63	934994	1 - 543	15 - 557	AA385852, AA489084, D80258, D80014, T11417, D59503, D59627, D81111, D58101, D80064, C14227, D58246, C06015, C14407, A1557751, A1535686, A1557774, AA514184, T03048, D51079, D80227, AW377671, C14298, D80269, D59695, D59467, A1535959, D59979, F13647, C14014, D80133, AA809122, D51213, D80188, D80522, D80043, D80378, D45273, D59502, D52291, D80195, AA305578, C03092, C15076, D80164, D59275, D80038, C14389, C14331, D80247, D80157, D81026, D51799, D80439, D51103, H67854, D80251, D58283, D80949, AA514188, D59859, D59610, D80022, D80166, D51423, D59619, D80210, D80391, D80940, D80233, D80045, C14344, D59787, D59995, AA305409, D59551, D81030, D80212, D80268, D80366, AW367950, D80196, D51022, H67866, D80219, AW178893, D57483, D80193, D59927, D80248, D59889, D51759, D80302, AW360834, D51060, D59317, D80241, D80024, AA514186, D59474, D45260, D60214, C14973, A1525237, AW177440, D51221, T03116, D59653, C14429, AW378539, A1525917, AW360817, C75259, A1525920, D60010, C14077, AW177505, AW375405, D59373, C14957, A1525227, A1525242, AW360811, C14046, C16955, C05695, AW178907, A1525923, AW178908, D80228, A1525235, T02868, AW366296, AW178906, AW360844, Z33452, AA285331, T03269, A1525912, AW179328, T48593, Z21582, AW375406, AW378534, A1525925, A1525215, AW179332, AW377672, AW360841, AW179023, AW178905, AW177731, AW378528, AW178762, AW179019, AW378533, AW378532, AW352120, C05763, AW352117, T02974, AW377676, AW178914, C04682, AW378542, AW360855, AW178774, AW176467, N66429, D51053, AW179020, AW352171, AW178980, AW352170, D51250, AW177733, AW378525, AW179024, AW352163, A1525222, AW179018, C13958, C13458, AW178781, A1535961, A1525928, AW378543, AW177728, AW369651, AW178986, AW177456, AW178911, AW378540, Z30160, AW178775, AW178909, AW179004, AW179329, AW178905, AW178754, AW352158, A1525228, H67858, AA305720, AW177508, AW177734, AW177497, AW179012, A1910186, AW177722, A1525216, A1525238, A1535665, A1525903, AB002449, AR016808, A82595, A84916, AB028859, AR060385, A132110, AR008278, AF058696, A62300, A62298, AR018138, I14842, AR054175, I50126, I50132, I50128, I50133, AR008277, AR008281, X64588, X68127, A70867, AR0602872, I82448, I79511, AR016514, X67155, Y17187, AR060138, A45456, Y17188, A94995, D26022, A26615, AR052274, A43192, Y12724, A63261, A43190,

					AR03869, A25909, A64136, A68321, AR066488, AR088443, Y09669, AR066487, A67220, D89785, A78862, D34614, A30438, AF123263, AR016691, AR016690, U46128, D88547, AR032065, AJ000347, D50010, AR008408, and AR060133.
HBIEJ66	65	787251	1 - 161	15 - 175	
HBIEJ29	66	888625	1 - 511	15 - 525	AA360671, and AI035652.
HBIEJ30	67	931103	1 - 413	15 - 427	AA806058.
HBIEJ70	68	971161	1 - 65	15 - 79	
HBIEJ42	69	669495	1 - 410	15 - 424	
HBIEJ21	70	671201	1 - 291	15 - 305	
HBIEJ29	71	693490	1 - 411	15 - 425	AC002126.
HBIEJ83	72	847920	1 - 414	15 - 428	AA760836, and AW085046.
HBIEJ029	73	693491	1 - 323	15 - 337	
HBIEJ15	74	847843	1 - 363	15 - 377	AC005580.
HBIEJ73	75	764573	1 - 320	15 - 334	
HBIEJ19	76	953804	1 - 249	15 - 263	
HBIEJ844	77	715846	1 - 608	15 - 622	W72060, W76253, AW291566, AJ360806, AI871850, and AF086367.
HBIEJ76	78	527553	1 - 648	15 - 662	AA625290, and AJ940996.
HBIEJ94	79	794343	1 - 258	15 - 272	AI133485.
HBIEJW15	80	507534	1 - 650	15 - 664	
HBIEJ09	81	573781	1 - 276	15 - 290	
HBIEJ16	82	421567	1 - 350	15 - 364	
HBIEJ239	83	690479	1 - 320	15 - 334	
HBIEJCS1	84	725818	1 - 484	15 - 498	<p>T11506, AA490380, AA280331, AA233664, AA233243, AA232989, N49790, AI886810, AI660641, AI707610, AA243850, AA001344, AI814340, AI718247, AA897648, AA714834, AI499266, AI190321, AI832024, AI718088, AI718693, AI014672, AI091271, AW169874, AI078790, N52465, AI265448, AA811481, AI057060, AA744777, AA642417, N49687, AA233550, and AI222478.</p> <p>AA303049, AA482928, F30630, AI915081, AA349606, AA832175, AW104788, AI962030, AA237098, H29914, AI119555, AA599423, AA878431, AI452836, AA613624, AW117860, M62259, AI659023, AA719523, AA632479, AA643770, AA632556, AI144081, AW302711, AW301906, AW302753, AI127426, AA493503, AA173342, AA664604, H69515, AI053560, N90460, AA837000, AA481887, AA804187, AA720732, H86106, AA394066, AI865807, AI701959, AA467988, AA586656, AA468051, AA992877, AA911515, AA515728, AW068316, AW188742, AI369580, AI354847, AA323085, CI16659, AA95827, F24728, R98218, AA302817, AI653776, AA492313, AC003007, AC005632, AI133163, AC007371, AC007011, AI121754, AC005011, AF001549, Z98304, AC004383, AC006312, AC005696, AC005488, AC005412, AC006088, AI049778, AC005682, AC005544, AI021937, AC006515, AI049636, AC004887,</p>

AL034417, AC004796, AC004895, AL121757, AL031587, AC006141, AL049829, AC002492, AL022345, AC012384, AC005484, AC005520, Z83844, AR036572, U91328, AC002302, AC004050, Z95114, AF001550, AL0035079, AC004682, AL034421, AC005041, AL109627, AC002531, AC006432, AC002310, Z95115, AC004148, AC004671, AL121603, AL109952, Z92542, AL010598, AC005808, AL022726, AC005300, AC004584, AC005874, AF134471, AC006117, AL049776, AC005089, AC004686, AC004941, AC005037, AC005049, M63796, AF050154, S42653, AC005015, AC003043, AL033527, AC006254, AC016830, Z77249, Z95116, AC005291, AL031672, AC006530, Z86990, AC002351, AL031577, AL096712, AC004106, AC004622, AC006077, AC005902, AC006111, AC006115, AF111169, AC005881, AC003109, AC016027, AC005988, AC006208, AC007546, AC003681, Y14768, AC007055, AC005839, AL078639, AL080243, AC010197, AC006013, AP000505, AC006112, AL020993, AC005387, AC000082, AL031005, AL035683, AL049589, Z98742, AC006241, Y18000, AC005932, AC007676, AP053356, AL022238, AC007314, AL031680, AL022328, AL034429, AC006101, AC008372, AC005377, U95742, AC005231, AL121652, AC006480, AL031118, AC002365, Z83840, AC010170, AC007421, AF042090, AC006454, AL021940, AC009247, AC002119, AL022336, AC004815, AC007386, AC004531, Z97055, AL022302, AL022322, AP000547, AC006035, AL035405, AC004042, AC007216, L44140, AL031281, AL0246003, AL049874, AC007637, AC000120, Z77852, AL035530, Z83826, Z99128, AL096702, AC005305, AL121655, AC006441, AC002425, AL049843, AL031666, AL049872, AF134726, AC005562, AC007461, AC000353, AP000503, AL079342, AC004491, AC004797, Z97054, AL022320, AC005046, AC002553, AF196970, AC006121, AC005754, AC006486, AC004859, AC009069, AC005746, AL008730, AP000251, AL049697, AC006449, AC007993, Z81369, AC003093, AL021154, AF207550, AC012331, AL034451, AP000030, AP000134, AC005971, AC006011, AL133246, AL132985, AC000097, AC007878, AC005261, AL079295, AL031602, Z98949, AC004694, AC005288, AC006014, AC006547, AC006539, AP000558, AC005104, AC008044, AC004837, AB018307, AC004883, AC006360, AC003950, AC007406, AL021707, AC007773, AL121658, AP000692, AL035458, AL033392, AC004254, AL034548, AC003010, Z75888, and AC004611.					
R94150, and T86024.					

HBIFW55	95	526682	1-259	15-273	AA283995, AL478915, AA283951, AJ817564, AA283760, AA287165, AA286859, AA789104, and AC007068.
HBIFW68	96	573766	1-172	15-186	
HBIFW78	97	571347	1-380	15-394	
HBIFX57	98	573760	1-305	15-319	AL078584.
HBIFX81	99	529843	1-227	15-241	
HBIFY40	100	574095	1-450	15-464	
HBIFZ21	101	671191	1-235	15-249	
HBIFZ40	102	526679	1-437	15-451	
HBIFZ56	103	507530	1-329	15-343	
HBIFZ82	104	799685	1-325	15-339	AW005281, and AA528937.
HBJGB39	105	739095	1-551	15-565	
HBJGT72	106	957668	1-354	15-368	R50003, and R50021.
HBJGT92	107	919507	1-722	15-736	T84928.
HBJGU70	108	864063	1-474	15-488	
HBJGU78	109	920821	1-568	15-582	AI553853, AW079768, AI683616, AI536091, AI254730, AI56243, AI630887, AI829696, AI889334, AI344419, AI411027, AI391729, AI926804, AI282481, and AC004031.
HBJGV17	110	662725	1-475	15-489	
HBJGV22	111	613781	1-280	15-294	
HBJGV32	112	699075	1-377	15-391	
HBJHG04	113	836184	1-419	15-433	
HBJHG76	114	970826	1-476	15-490	AC008282.
HBJH28	115	686278	1-314	15-328	M62004, and AI035410.
HBJH44	116	621723	1-359	15-373	AA207226, AL121444, AA019182, AA333455, W96231, AA331923, H08904, AA446987, and AW167577.
HBJHM50	117	724183	1-336	15-350	
HBJHM57	118	973257	1-419	15-433	
HBJHM76	119	715512	1-324	15-338	
HBJHN52	120	726570	1-334	15-348	
HBJHO11	121	964943	1-522	15-536	AW006288, AA977097, AI368637, AW197236, AI341105, AI650705, AI816278, AI590528, and R44511.
HBJHO60	122	975186	1-395	15-409	AL121820.
HBJHR36	123	686717	1-592	15-606	AA0077952, AA482768, R96657, H79151, AW103981, AA169194, AA325699, M78177, AA626678, T69877, AA569387, AA332991, AA323749, AA326441, AA975645, AA357937.



					AL434706, AA491762, AA568331, N29941, AW419262, H92005, AI000800, AA847509, AA973803, W95976, AA650623, AA862181, W95841, N87420, AA523837, AA693370, AA446557, AA630362, R38154, AL120483, AL138455, A1865400, A1184354, A1110444, AL039958, AL1799642, N84245, R67504, Z98473, AW152064, A1051230, AA377730, AA780929, A1056964, AW338754, AA563818, AA587604, A1348611, N22424, AA704391, A1270343, N70103, N70020, AF041058, AC005745, AC007666, AF054569, AF042835, AF045999, AC007999, AC004938, AC004098, U66059, U07563, AC004821, AC002073, AC003101, AC004447, AL078475, AF009660, AC005166, AC006538, AC002286, AC005781, AC004854, AC005523, AC005940, AC002550, AP000961, A1003147, AC000094, AC005838, AC000085, AC005023, AP000553, Z69366, AC007106, AC005815, AC016025, AF010238, AC007845, AC004972, Z49237, AP000404, AL021393, AC005409, AC003041, AL031680, Z93241, AL034402, Z84572, AC005632, U67825, U67826, AC004253, AC005414, AP000555, AC002347, Z82198, U67829, AL031774, Z60740, AC005031, AF044101, AP000350, AP000111, AP000043, AC001050, AC016026, AC006141, U80017, AC001228, AC010197, AC001531, AC007226, AC005015, AC010209, AC004895, AC006312, AL031283, AC005081, AC005291, AC004812, AF129107, AL096761, AL023579, AF051934, AL024507, AC008170, A1229042, AC005531, AC007878, AC009516, AL033681, AC006128, AL035417, AF207550, AC003998, A12121653, AP000705, AC006581, AC008045, AL035249, AC002985, AC010077, AF091512, AC003086, AC002429, AL008582, and AC000385.
HBJHT32	124	488736	1 - 321	15 - 335	
HBJHV93	125	881606	1 - 348	15 - 362	H68571, AA641767, and AA223840.
HBJHX08	126	958970	1 - 636	15 - 650	AL117342.
HBJHZ03	127	923733	1 - 491	15 - 505	
HBJHZ08	128	938969	1 - 373	15 - 387	
HBJIA19	129	920881	1 - 678	15 - 692	AA773280.
HBJID21	130	494812	1 - 324	15 - 338	
HBJID21	131	670642	1 - 415	15 - 429	AA524953, AL418334, A1079663, and A1807855.
HBJID81	132	697594	1 - 433	15 - 447	AA864727.
HBJIL11	133	966701	1 - 414	15 - 428	AC007564, and AL049766.
HBJIL31	134	847865	1 - 527	15 - 541	
HBJIL53	135	971136	1 - 524	15 - 538	
HBJIL75	136	698405	1 - 399	15 - 413	
HBJIL88	137	721859	1 - 475	15 - 489	
HBJIO70	138	725097	1 - 424	15 - 438	
HBJIO79	139	774812	1 - 486	15 - 500	A1797163, AA761740, and A1278601.
HBJIR58	140	735365	1 - 330	15 - 344	AC002470, and AC007308.

HB/JY20	141	669519	1 - 148	15 - 162	AR050541.
HB/JY86	142	725084	1 - 632	15 - 666	
HB/JJB02	143	919379	1 - 435	15 - 449	AC007488.
HB/JJB04	144	878974	1 - 448	15 - 462	
HB/JJB11	145	965016	1 - 424	15 - 438	AC007319.
HB/JJB15	146	659920	1 - 512	15 - 526	N27511.
HB/JJB26	147	681342	1 - 359	15 - 373	<p>AI886860, RI7495, HB6146, AA582791, AA069643, W02625, AA745628, T51436, AA593892, A955111, A7169038, A1538214, N32496, AA243974, AA244061, AA273725, AA745653, AI343169, W24944, H39038, AA856904, AA324108, T62233, AA279649, AI188676, AW410201, AI671077, W03120, AI570237, AI187624, AW404337, AA848002, AI18661, HB1267, AA229422, F23294, T26476, AA523695, AA032001, AW341741, F30158, R32162, AI179304, AA452325, AA668715, AA215470, AC004644, AC006111, AC005618, Z95331, AC006146, AC002312, AI021918, AC005089, AC005086, AC002381, AI031295, AC004687, AC008101, U91322, AC016027, AC005874, AF134471, AC016830, AC005081, AF047825, AC006449, AC007425, AI049709, AI132777, AC005730, AC002352, AI031311, AC009946, Z83819, AC003108, AC004970, AC003982, Z98884, AC005969, AC006006, AI121638, AC005015, AC008079, AC004216, AC005193, AC007546, AC007731, AI139054, AC006241, AI121825, AC006312, AP000504, AI133485, AC005500, AC004794, AC002544, U95739, AC003098, AP000103, AP000032, AI133243, AI021155, AF129756, AC004253, AC006581, AC005921, AI035681, AI022165, AI109758, AC007227, AI021391, AF111169, AC006130, AC005666, AF196972, AC007537, AI096701, AI050332, AI022334, AI096678, AC006084, AP000216, Z98751, AC002301, U15422, AI034402, AC006251, AC003037, AI1035684, AI034418, AC005006, AI121653, AF196779, AC006211, AI078593, AC005531, AC005237, U73634, AC007566, AC002126, AF064861, AC005562, Z83843, AC002565, AC006040, AC000379, AI021026, AC005018, AI035460, AC005317, AC007376, AC004883, AC005037, AC004821, AC005971, AF001550, AC002404, AI098665, AC005207, AI031584, AC000035, AC005332, AC004938, AB020864, AI133163, AP000694, AC003661, AF003626, AC005486, AP000516, AC004876, AI035086, AI135744, AC005815, AP000514, AC003563, Z98752, AI049780, AC007055, AC006441, AC005377, AC008372, AC009510, AI031778, AC005664, AF111168, AC005907, AI031281, AC005620, AI021707, AF126531, AC020663, AI022302, Y14768, U91321, AI109967, U91327, AC000025, AC006160, AC004386, AC007052, Z83826, AC005544, AC007011, AI031673, AC004150, U65630, AC003072, AC007686, AC005048, AC006132, AP000553, AF195658, AC004542, AC002316, AI022336, AF053356, AP000043, AP000111, AC004647, U91323, AC005082, AI133448, AI099532, Z97055, Z93017, AP000030, U07000, AC005768, AC019014, AI049832, AC007774, L78833, AC003119, Z84480, AC002365, AI121655, AC004223, AC005839, AC000353, U80017, X69908, AC005325, AI020997, AC003829, L78810, AC005632, AC005821, AI035413, Z69719, X69908, AC004933, AC002310, AC004983,</p>

	HBJJB40	148	710873	1-519	15-533	AL022326, AC008041, AC007283, AC007510, AC005180, AC004895, AC008115, AC005192, AC005378, AC005484, AC004804, AC006974, AC005527, AP000704, AC012398, AC005291, AC004813, AC005696, AC005070, AC004000, Z69705, and AL031685.
	HBJJB61	149	741615	1-369	15-383	AI205547.
	HBJJB62	150	743096	1-422	15-436	
	HBJJB74	151	765406	1-426	15-440	
	HBJJB78	152	489438	1-390	15-404	AA076977, and AA076965.
	HBJJDJ31	153	691780	1-452	15-466	RS8828, AP000556, and AP000557.
	HBJJD90	154	712982	1-435	15-449	AL035090.
	HBJJH48	155	721473	1-357	15-371	
	HBJJTJ13	156	915977	1-414	15-428	W03924.
	HBJJO29	157	666221	1-384	15-398	AA566068.
	HBJJS46	158	718894	1-589	15-603	
	HBJJU62	159	664298	1-415	15-429	
	HBJJX01	160	671611	1-375	15-389	AWA49043, AA515418, EI5648, EI5652, and EI5653.
	HBJJX04	161	949592	1-917	15-931	AI543473, AW294828, AI521275, and AI797793.
	HBJJX11	162	847854	1-403	15-417	
	HBJJX44	163	657242	1-561	15-575	T55674, N32741, and ALI110337.
	HBIKA75	164	682250	1-233	15-247	AA357979, AA357978, AA078137, AA078184, H63953, A1431513, AL036665, AA572974, AA626840, AA744095, AA774006, AI561043, AW029269, AI928890, H63220, AL037927, AA744423, AW105463, AA026595, T49133, AW151761, AA484191, D82321, AA513884, AA0019964, F30158, AA317261, TS1436, AA745628, AA515351, AA587826, AA573062, N34689, AA666066, AA053463, AA640252, AA434346, AA808847, AA669747, AI479148, AA478602, AA657374, AA564582, AI370170, AA599749, AA713705, AA653638, T06576, AA015948, AI635400, F32213, AA826102, IAB60535, AW128881, AIS90404, AW419389, AA741301, N30650, W379218, AA610433, AA568314, H65308, AG699517, AI362694, AA151541, AA302978, AW085790, W272815, AL079734, AI811647, R81176, AA653985, AW069412, U91320, AL121825, AC006065, AC006538, AI109827, Z98051, Z79997, AL078611, AC005081, AC005015, AC002457, AC003037, AC007057, AC005534, AC005037, Z99128, AC002316, AC005696, AC005192, AL035089, AC005772, AC005253, AL024498, AC005562, AL008715, AC005184, AF196779, AI122020, U96776, AI1096677, AI109847, AC004815, AC002456, AC005231, Z83820, AC005284, AC004158, AI031594, AL049713, AF207550, AC003969, AC010200, AL109865, AC003973, AC005214, AI031776, AC007129, AI050318, AF121781, AC004797, AC006312, Z99716, AF053356, AC002073, AC004531, X64467, AC005031, AP000008, AL049570, AP000704, AC005828, AL031433, AC008115, X64467, AP001905.

AC007363, AC004967, L77036, AL078463, AC004036, AL050348, AL022718, AC007193, AC004805, AL133353, AC009509, U77080, U77078, U73330, Z49235, AC004975, AF111170, AC009542, AL135744, Z83826, X81637, AL049590, AC005212, Z84482, AC004167, U80017, AC004589, AL024474, AL035694, AL031672, AC005921, AC007736, AC007736, AC005014, AC002433, AP000142, AL022326, AL049743, AC000379, Z99291, AP000081, AC005800, AC006000, AC003085, AC004843, AC002312, AC011331, AC006039, AC005726, Z97030, AL008635, AL020997, AC007371, AL035397, AL049872, AP000358, AC006126, AC005808, AL031284, AC002364, AL132985, AC007421, AL023513, Z68285, AC007191, AL096761, AL022320, AF124730, AC005532, AL035685, AC005294, AL022577, AL031719, AL031602, AC004973, AC004223, L78810, AC002994, AC005105, AC007073, AL109963, AC005625, AC004816, AC007546, AC006450, AF109907, AF001552, AL021154, AC004585, AC005071, AC006441, AC005157, AC007041, AC004491, AC004605, AL018725, AC006276, AC002984, AD001527, AC002128, AP000252, AL132799, AP000212, AP000134, AP000030, AC005006, AC003865, AL049631, AC007880, AC004659, Z98941, AC004686, AC004020, AC006213, AC005243, AC004887, AC006560, AC007225, AC004692, AL133216, AL049833, D87675, AP001054, AL024494, AC005781, AC004901, AC005972, AC004001, AP000694, AL109627, AC004835, AL049709, AL031985, AL034549, AL121652, AL049829, AC009399, AC002301, AC005232, AF057280, AL031680, AC009330, AL022336, Z84479, Z98742, AC005728, AL009031, AC004103, AC005220, AL117338, AL035681, AC005531, U96629, AC018633, AL022322, AC004168, and X06828.	165	974123	1 - 494	15 - 508	AC032590, AL568523, AL015921, AL020884, R08692, W01056, AL918022, AL049648, AC004805, U91322, AL079304, AL023581, AC005611, AC005243, AC007298, AL031056, AC000004, Z98884, AL049830, AP000246, AP000129, AP000207, AC005579, AC004525, and AC013256.
HBKCS6	166	735812	1 - 287	15 - 301	T96742, and H57012.
HBKCS6	167	974121	1 - 514	15 - 528	
HBKJD68	168	676330	1 - 238	15 - 252	
HBKJB63	169	744847	1 - 369	15 - 383	
HBKJF06	170	935033	1 - 589	15 - 603	AW241714, and AA927828.
HBKJF86	171	714449	1 - 494	15 - 508	
HBKJL26	172	489160	1 - 516	15 - 530	W87882.
HBKJL78	173	588085	1 - 317	15 - 331	
HBKJL51	174	784830	1 - 865	15 - 879	AW451973, AF76808, H88067, AA477171, ALB76202, AA760752, AA781175, AW173607, AA992090, AL654796, AA946869, and H88069.
HBKJL57	175	683265	1 - 460	15 - 474	AA465326, and AL031733.
HBKJL73	176	765356	1 - 408	15 - 422	

HBILL82	177	735748	1 - 474	15 - 488	AA483929, AI499588, N57739, AA664548, AA493136, AI524360, AT791913, AI821714, AA482273, AW023990, T06754, AA455670, AA606672, AA501649, AA961035, AA579179, AA837087, AA533782, AA487888, AW438542, AA503298, AI821785, AW023149, AI223700, AW149313, AA588001, AA618452, AI473475, AA662976, AW270343, AI933714, AI431240, AA858372, AW148507, R31790, AA857370, AW190604, AA339692, AA580808, AA844261, AA502991, AW238605, AA370455, AI580250, AA507282, AI648410, AI587224, AA483771, AW270709, AA595499, AA516233, AA828062, AA501852, AA719073, AI470646, AA846935, AA297666, AI859438, N23504, AI683446, AA436774, AI138096, AA002063, AA6035368, AI042927, AI874308, AA654661, AA610688, AA436782, R23521, AA515905, AA502440, AI696595, AA071334, AA621381, AI921043, AA468505, AW341978, AI792133, AA230213, AA043770, AA631632, AI036037, AI354388, AI754544, AA707782, AI707705, AI341571, AA833896, AA282820, AA833875, AI733856, AA780944, AA503119, AI754567, AA483223, H25921, AI755214, R23441, AI691091, AA493975, AA368573, AI056177, AA522642, AI038971, AA513893, AA653375, AI044586, AA687535, R73754, H29019, AA634837, AI047429, AA209423, AI587565, AI587583, AW302080, AI253007, AW081194, AW302087, AI434695, AA077019, AC004257, AC005696, AC016830, AC005060, AC006313, AC005071, AC003070, AF111168, AI049779, AI031447, AF047825, AC004659, AC006120, AC004148, AI133246, AC016027, AC007191, AC005002, AC005527, AP000556, AP000252, AC003029, AP000552, Z82180, AC003690, AC005226, AC004832, AC004883, AC005581, AC005387, AC004999, AI121653, AC004884, AC006312, AC005519, AC007842, AC005003, AI033518, AP000557, AI096701, U82828, AI049653, AP000703, AI121595, AC006251, AP000116, AP000049, AC007277, AC004638, AC005914, AI035422, AI050318, AC005880, AP000121, AP000053, AC005939, U47924, AI110502, Z97054, AC006112, AC005317, AI135744, AP000311, AC003663, AI049761, AC004953, AC004019, AC002116, AC005694, AC006487, AC005512, Z95115, AI021807, AI049745, AC007011, AC002301, AC005231, AC002375, AC006978, AP000066, AP000538, AC012384, AI109984, AC005197, Z75746, AF001549, AI031228, AC004814, AC006285, U82668, AP000513, AC005529, AI021940, AC005971, AC002310, AC006208, AP000244, AF111169, AC005899, AC005280, AC005049, AC0060441, AC002531, AI049776, AC002063, AC007172, AI022165, AC004675, AC005051, AP000251, U91326, AC004149, AC003024, AF165926, AC006530, AI003147, Z85999, AI023553, L77570, AI049589, AC009247, AC005305, AC005790, AI109798, AC007193, AC005730, Z84483, AI034451, AC002492, AC004983, Z84466, AC004706, AC007450, AP000355, AC005181,
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HBIL57	183	734522	1 - 322	15 - 336	
HBIL68	184	732810	1 - 332	15 - 346	
HBILP14	185	752747	1 - 341	15 - 355	
HBILR56	186	843811	1 - 882	15 - 896	
HBILR82	187	779004	1 - 354	15 - 368	
HBILV29	188	823400	1 - 374	15 - 388	
HBIMA30	189	661665	1 - 646	15 - 660	
HBIMA51	190	725095	1 - 179	15 - 193	
HBIMC53	191	726491	1 - 454	15 - 468	
HBIMD71	192	760155	1 - 531	15 - 545	
HBIMD74	193	975088	1 - 467	15 - 481	
HBIME92	194	792110	1 - 426	15 - 440	
HBIMF23	195	675692	1 - 379	15 - 393	
AF088319, AC006581, AC002543, AP000065, AC007546, Z93942, AC005856, Z85996, AL080317, AP000689, AC005409, U89335, AL031673, AP000030, AJ133269, AC004812, L42140, AC000139, Z98036, AB023052, AF196969, AJ010770, AC002470, Z83844, AC004686, Z88214, AC000134, AC003982, AL078477, AC009516, AL035420, AP000692, AC016831, AC005999, AC003993, L78810, AC005531, AC007358, AC005089, AC005800, AC004655, AL049699, AL033543, AC006137, AC002041, AC000025, AL049757, AC004383, AC007387, U91323, AC007227, AP000512, AC007262, Z98884, AL133448, AL049759, AC007114, AL033522, AF043945, AC006211, AC007636, AC004955, AC004263, AF129756, AL022721, AC005598, AL031255, AC005765, AL049872, AL031983, Z85986, AL035684, AC007371, AC008040, AC003043, AC008132, AL022323, AC005520, AC005480, Z98051, AL049760, AL080243, AC004815, AL022316, AC005037, Z83846, AL023807, U80017, AC002472, AL133163, AC007919, AC006453, U91325, AC005535, AC005940, AC000353, AC005209, AL022396, AL008582, AP000503, AC007540, AC002996, AC007785, AC006026, AC005081, AC004448, AC007686, AC006040, AC016026, AC002395, AC004848, AC005234, AC002070, and AL139054.					
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AW239537, AA232075, W78769, AW020962, AA448818, AA128583, and AJ010842.					
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T87986, and AA814273.					
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AA126910, AP000360, AC000053, AC002060, and AC005002.					

HB/IMF30	196	691179	1 - 566	15 - 580	AW182540, AA610084, AL936489, AA306791, AW340569, AA905749, and AB033030.
HB/IMF47	197	720050	1 - 374	15 - 388	AW004683, H87822, H87851, and AW015156.
HB/IMF76	198	720047	1 - 425	15 - 439	AC004254.
HB/IMK34	199	935952	1 - 443	15 - 457	AL031657.
HB/IMK94	200	794129	1 - 438	15 - 452	AL031657.
HB/IML28	201	614911	1 - 465	15 - 479	AL031657.
HB/IML69	202	864004	1 - 662	15 - 676	AL031657.
HB/IMM72	203	760833	1 - 408	15 - 422	AL031657.
HB/IMN75	204	699060	1 - 448	15 - 462	AL031657.
HB/IMQ86	205	576429	1 - 513	15 - 527	AL031657.
HB/IMR15	206	964484	1 - 493	15 - 507	AL031657.
HB/IMR60	207	740142	1 - 601	15 - 615	AL031657.
HB/IMT52	208	726480	1 - 240	15 - 254	AA601336, AA640305, AW341878, AL567676, H79323, AA593168, AW020612, AA167656, AW085626, AA729004, N27362, F33374, N49298, AA179364, W45416, AL1520984, T89141, R99617, AL233347, AB918661, AL061158, AL281622, AA947352, AA228268, AA664963, W27084, AA761454, F01694, T57636, AA299490, A1744890, N63562, AL640905, AL6919048, H81012, AL569452, AA828840, AL828721, AA496042, AL028376, AL343808, AA776663, AA428991, AL363336, AL149177, AL049743, AF165926, Z83840, AL109984, AL031311, AC005412, AC004821, AC007686, AC007546, AC007207, U85195, AC005377, AC007421, AC008115, U95742, AE006658, AC004832, AL035587, L78833, AC007216, AL020997, AL031589, AC004797, AC005520, AL035420, AF196779, AF139813, Z98200, AL033392, AC003025, AL035086, AL080243, AL121655, AC006530, AC005355, AC002312, AL246603, AC004228, AC004895, AC005180, AL096791, AC006312, AP000512, AC005519, AC006283, AC005081, AL049869, Z82190, AC005839, AC005015, AL049694, AC004816, AC006071, AC005726, AC002120, AL031293, AC005089, AC006121, AL021453, AC005527, AC005696, AC006139, AL135744, AL133163, AF217403, Z97630, AC005971, AL035422, U78027, AC004878, AC004975, Z82176, AF023268, AC000025, AL121603, AL008582, AL049757, AF001549, AC005399, AC005914, AC007387, AC005207, AC000048, AF207550, AC005821, AC002094, AP000248, AC005876, AC002117, AC005231, AC005288, AL034429, AC006130, AF111167, AP000704, AL133448, AL096701, AC007386, AF111168, AC005529, AL031280, Z98884, Z73799, AF134726, AC004099, AC006581, AF051976, AC006160, AC006607, Z93020, AC004212, AL008734, AC007993, AC005695, AP000555, AC004913, AC007308, AF109907, Z97056, AC005277, AL020995, AC003041, Y18000, AL117329, AC007263, AL034421, AP000503, AP000008, AC004967, AP000514, AC004834, AC002558, AL034420, U52112, AC005632, AL022333, AC005755, AL049780, AL031123, AC007055, AL132246, AC005911, AC005049, AC003109, AD000092, AC004897, AC007226, AC005183, AC005829, AL023807, AL122020, AL109952, AD000864, and AC005993.

HBIMV72	209	952862	1 - 469	15 - 483	
HBIMV20	210	669030	1 - 643	15 - 657	
HBIMX04	211	614930	1 - 338	15 - 352	
HBIMX21	212	933143	1 - 353	15 - 367	
HBIMX29	213	690404	1 - 347	15 - 361	
A1810024, A W023610, and AA609969.					
AW166629, AA601349, AA052895, N66744, A1732437, A1114704, T86740, AA491447, T98482, AA918759, AA663115, AA663086, AA291630, H72049, AW084038, R11040, A1026873, AW440498, T87973, AA846969, H93001, N63743, AA603883, AW028174, AA838162, AA507035, AA706845, AA837385, AA291700, AA297496, H73336, AA532365, AC004961, AL133382, AL034411, Z73420, AC002352, AC004887, AC003108, AC004645, U91326, AC006111, AC005509, AC004081, AL008712, AC016831, AL031276, AL031332, AC005531, AC007298, AL080286, AC004950, AL031985, AC004987, AC004448, AP000365, AL021939, AP000514, AL015262, A1229043, AC005037, AL020993, AF196969, AP000347, U08988, AP000295, AP000044, AP001112, AP001152, AC004223, AC007663, AC006549, AF001549, Z68756, Z70289, AC007774, AC005516, AC004466, AC002312, AC002390, Z92547, AC005746, AC003071, AC002544, A1010770, AL031584, AL121595, AB014080, AF017104, AB026898, AL050312, AL034408, AF020662, AC000078, AL109798, Z95331, AC002400, AC006441, AL049430, AC006059, AF147316, AC005081, AC004638, AC004876, AC004106, AL022578, AC002365, Z85987, AF196779, AC007364, AC004167, AL034582, AC016027, M98447, U82671, AL009179, and AP000553.					
HBIMX34	214	703843	1 - 382	15 - 396	
HBINC11	215	966608	1 - 516	15 - 530	
HBINC89	216	786707	1 - 341	15 - 355	
HBIND59	217	576434	1 - 767	15 - 781	
AA985391, A1053911, AA548890, AW403888, AL037632, AA081462, A1470646, AA834809, AA588001, AA833896, AA833875, A1580250, A912287, AA483771, AA380354, H59372, AW274349, AW303196, AA580808, AW196064, H61630, AW301350, AL138096, AA515457, A1791913, A1792133, N54894, A1821714, AA679154, A1282511, A183218, F25733, A1270096, AL119713, AL120687, A1283312, AA683258, AA507822, AA457642, AA491862, AA838190, AA491650, AW270270, H70994, A1821785, AW440545, H69109, AC007226, AF003528, AL031905, AC005815, AL008715, AC005036, AC008055, Z98941, AL096772, AC023172, AC005144, AC006013, AC007435, AP000228, AF163147, AP000140, AC007488, AP000088, AC005722, AC002480, AL049712, AC002523, AP000201, AP000093, AC005881, AC007447, Z82198, AP000097, AP000237, AF107258, AC007437, Z74739, Z86064, A1229042, AC005261, AF001552, AF146191, Z83846, AC007842, AL009050, AC007671, AC005249, Y12853, AC007298, AL023807, AC004216, AC008372, AC005011, AL078459, AL031664, AC007066, AP000961, AL023508, AL079342, AL024495, AC005284, AC004741, AL121595, AC002499, AL021978, AC005874, AF134771, AC005146, U91323, U82668, AC002536, AP000066, AC007262, AL033379, AC004948, AL080239, AC002091, AC007681, AL049744, AP001020,					



					AC006965, AL033527, AL008629, AC007363, Z98742, AC006450, AC007182, AL020995, AC003009, AC006210, AF045450, Z84483, AC008122, AC006080, AC004638, AC002492, AL080283, AL022336, AL049779, AF165175, AC007395, AL020989, AC002543, AC004803, AL021939, AC006322, AC005682, AC008072, AC005006, AC009721, AC003086, AC006379, AC005243, AL021391, AC004061, Z97205, AC008124, AC005035, AF064860, AL031666, AP000108, AC007270, AL022144, AP000086, AL031681, AC005082, AC002429, AC009069, AL033525, AB020869, AC004905, AP000958, AP000161, AL031735, AC002449, AL133241, AP000150, AF053336, AL049540, AL049875, AC0010169, AC005410, AC004108, AF015262, U87696, AL031012, AL035416, AL117329, AL096792, AL022323, AP000009, AC005871, AJ229043, AC002463, AL121877, AC005482, and AC006390.
HMBBC18	218	578857	1-298	15-312	AB014526.
HMBBC25	219	573103	1-414	15-428	
HMBBC35	220	921417	1-348	15-362	AC004702.
HMBBC91	221	506594	1-560	15-574	H69543, H80124, W88965, W88544, R02124, and AP000497.
HMBBE72	222	760737	1-632	15-646	AW205507, and AL300640.
HMBBE84	223	578869	1-325	15-339	AC005905.
HMBBH36	224	971172	1-341	15-355	
HMBBH35	225	732250	1-289	15-303	
HMBBH01	226	753141	1-199	15-213	
HMBB106	227	933819	1-407	15-421	
HMBBN32	228	775670	1-362	15-376	AA127005, H06566, AA125853, R56714, and AF191018.
HMBBO20	229	496513	1-453	15-467	
HMBBQ33	230	702457	1-461	15-475	R11468, AL009031, and AC002326.
HMBBQ83	231	689705	1-533	15-547	AA604872, AA026240, AA704592, AA258677, AC004087, and AC002385.
HMBBS11	232	967111	1-355	15-369	AC018633, and AC003271.
HMBBT85	233	863938	1-349	15-363	
HMBBU24	234	677240	1-179	15-193	AA747565, AW207289, AL249497, AW366372, AL336633, AL342455, AL332653, AW149876, AL336634, AL524654, AL049713, T99953, R28164, AL538938, AL289542, AL344935, AL267185, F28295, AL114703, AL1811603, AA749184, AL048323, AW059828, F35428, AL048340, AL473208, AL479292, AL360195, AW022102, AL809507, AL285514, AA493923, AL383804, AL801325, AW020419, AL690813, AL687568, AA595932, H89138, AW188698, AL699020, AL687587, AL289791, AL521005, AL784233, AL918554, AL345005, AW020095, AW169643, AL345745, AL225000, AL440263, AL698427, AA939199, AL468959, AL310575, AL161279, AL799351, AL872423, AL334893, AA481494, AL340533, AA761917, AL669640, AL120831, AL284509, AL047398, AL689404, AW169628, AL040207, AL345736, AL273919, AA587590, AA502794, AL345415, AL246070, AL364629, AL345396, AL366959, AL828574, AL499104,

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HBMBU38	235	531494	1 - 311	15 - 325	
HBMBX69	236	698362	1 - 319	15 - 333	
HBMBY27	237	574803	1 - 407	15 - 421	
HBMBS71	238	880580	1 - 1275	15 - 1289	
HBMCA44	239	716647	1 - 504	15 - 518	
HBMCA58	240	736084	1 - 287	15 - 301	
HBMCA94	241	793174	1 - 444	15 - 458	
HBMCD26	242	847826	1 - 275	15 - 289	
HBMCD49	243	723005	1 - 344	15 - 358	
HBMCE22	244	674659	1 - 439	15 - 453	
HBMCH75	245	932037	1 - 562	15 - 576	
HBMCH88	246	711318	1 - 387	15 - 401	
HBMCK57	247	495736	1 - 493	15 - 507	
HBMCK14	248	658484	1 - 253	15 - 267	
HBMCS34	249	703438	1 - 675	15 - 689	
HBMCS77	250	465070	1 - 486	15 - 500	
HBMCT67	251	751643	1 - 312	15 - 326	
HBMCL92	252	529580	1 - 514	15 - 528	
HBMCL21	253	967099	1 - 303	15 - 317	
HBMCL27	254	683436	1 - 351	15 - 365	
HBMCL73	255	855694	1 - 369	15 - 383	
HBMDA51	256	691116	1 - 434	15 - 448	

HBMDQ03	257	924183	1 - 405	15 - 419	
HBMDQ16	258	888206	1 - 398	15 - 412	
HBMDQ38	259	750274	1 - 135	15 - 149	
HBMDQ36	260	861576	1 - 279	15 - 293	
HBMDQ59	261	739316	1 - 333	15 - 347	AA027081, AI525633, AI525669, AI527238, AI527808, AI527602, AI547225, AI557426, AI541321, AW020592, AW022727, AW022178, AI541056, AW022874, AI541048, AW020406, AW019988, AW021777, AW022826, AW022299, AI527222, AI525802, AW022308, AW020328, AI886206, AW020634, AW023351, AW021693, AI527258, AW020931, AW022981, AW021182, AW020480, AW021466, AW022593, AW020629, AW023884, AI525857, AW021561, AW021059, AI525656, AW023617, AW020295, and AC007655.
HBMDQ19	262	657382	1 - 339	15 - 353	AA677098, and AC004814.
HBMDQ55	263	952830	1 - 393	15 - 407	
HBMDQ79	264	805554	1 - 788	15 - 802	F34605, AI340151, N69399, AI246061, AA229159, F00350, AI302350, H64549, F24745, R68706, H16875, AW071109, AI204309, AA523719, AA778580, AA456149, M85827, AI280566, M78026, Z30049, W45215, AA648957, H68343, AC012384, AC002480, AC005531, AL008710, AL035079, AL031729, AL049631, AC004025, AC004983, AI022320, U80017, AC007488, AC004477, AI121769, AL022397, AP000300, AC002994, AI049832, AC002350, AC007172, AC007066, AC006449, AP000113, AP000045, AC007014, AC004466, AC003681, AC006557, AC004791, AL031054, AC007880, AF109907, Z98884, AC005529, AC004797, AC002310, Z99943, AB000658, AC006101, AP000346, AI049712, AC003046, U15177, AC004874, AC005516, AL022316, AC002990, Z83822, AP000354, AC007040, AC005527, U91323, AC005191, Z82194, AI135745, AF001550, AC004656, AI031668, AC005829, Z95114, AI021707, AI121653, AC004448, AI121852, AI021578, AC004890, AC005184, AC005486, AC006141, AL008718, AC007228, AC004584, AC000003, AC003108, AC007919, AF196971, AP000501, AL096711, AC004816, U96629, AC006120, AF207550, AL031655, AC004263, AC005846, AC002367, AC006576, AI034429, AI003147, AC007955, AC002369, AI049709, Z86090, AI034420, AC018633, AI121748, AC000159, AI035420, AC006509, AC004953, AC002528, AC004878, AC003015, AC005280, U89337, AC005049, AC002303, AC006137, AC005099, AL008635, AC007546, AC005696, AC004858, U89335, AL035681, AC003029, AF024533, AL031255, AC005664, AC005207, AI109984, AI035587, AC005865, AI022326, AC005844, AC007182, AC005753, AC000097, AI008725, AI031848, AC006547, AC002470, U91325, AC000379, AB015355, AC005164, U91318, AI035652, AC005332, AC002091, AI049869, AC006468, AC005007, U95742, AC002565, AC006538, AC007707, AC005158, AC005800, AL031733, AC003075, AC005037, Z85986, AC005859, AC007216, AI031643, AC004223, AI041787, AB003151, AP000688, AI034423, AI022772, AC005736, AI031591, AC003982, AF069291, AC002312, Z82190, Y10196, AC004098, AC004967, AP000313, AC003950, AI035249, Z95704, AC005197, AC009542, AC005484, and AR036572.

HBMDJ11	265	967046	1 - 325	15 - 339	AC005971.
HBMDJ36	266	721673	1 - 188	15 - 202	AW303196, AW274349, AW301350, AT754955, AA649722, AA634145, AA768097, AA937687, AA810370, AA719080, AA573020, AA644207, AA709005, AA504638, AA558060, AA487858, AA568778, AA649705, AA579736, AA554319, AA858197, AA461233, AA513972, AA501578, AA814522, N29933, AA1132914, AA483731, AA480790, AA824655, AA582911, AA077817, AA437161, AI830390, AA523815, AA350859, T15897, AA650450, AA602528, AA070468, AA861959, R97934, AA845813, AA634706, AI962050, AI284640, R38154, AA610493, AW440976, H50727, AI251002, AW236342, T07451, AA167659, AA525824, AA577906, T71030, AA229785, AA522942, AA603156, R97326, T06828, AA678499, AA743978, AA504871, AA578481, AA492140, AA623002, AI970213, AI625244, M77899, T05101, R89294, AA199616, AA490183, AW193265, AI828332, F18974, AA5259245, AW276435, AI270117, AA826303, AI688846, AA605032, AA649642, AI824562, AA745104, T41124, AA113861, AA720548, AA729721, AA634146, AA525876, AA326589, AA569167, AI205126, AI278997, AA552885, H64778, AA346575, AA610611, T08438, AA325817, AI339850, AA075995, AW029038, AA558015, AA947360, AA804379, AI929531, AA664015, AA837677, AA632837, AA515435, AA550758, AA973803, AA483068, H63607, AA774184, F32800, AA770387, AA719805, AH34695, T06556, AW088038, AI537955, AA177061, AA020850, N66428, AA594145, AI469172, F19012, F36273, AA401022, AI216799, AA886584, AW438643, AA578391, AI281697, N33611, AA252263, AA837084, AA446657, AA947811, AA233519, AA780797, AA847128, AA771811, AA491762, AI291124, AA378580, AA586562, AI471481, AW166815, AA4890235, AA713815, AA745410, AW162049, AA515051, AA665072, AW419118, AA323749, AI291268, AW276827, AI014358, AA503473, AA610783, AW021747, AA449088, AI537030, AA599920, AA605274, H10994, AI046409, AW440836, AA743960, AA368936, AI341548, AI679782, AA813902, W16581, AI904894, AA678443, H64563, AI564185, AA601499, AA485291, AA598586, AW193432, AA779040, AA346454, AA775940, AI044940, AI917271, AA557879, AI281881, AI469003, AI287651, AA385100, AA557686, AI801591, AI446464, AI286264, AW302450, AF150152, AA325699, AA441788, T40077, AI918421, T41155, AA225155, T67750, AA678772, AA827295, N63352, AI431303, AI049722, AI133636, AI567674, N25296, AA501722, AI002834, AA558697, AA747480, AI053672, AI674873, AA644551, AA551503, W47183, F03097, AI350211, AI890923, AA468131, AA352803, R97969, AA552945, AA569387, AW338500, AI046457, AA513293, AI375710, AA458736, AI287528, AA587604, AP000130, AP000208, AP000247, AP001046, AI096701, AP000302, AP000114, AP000046, U13056, U07000, Z83822, U14694, U12508, U14719, AC004606, AP060568, M27161, AC005994, Z82208, AF003528, U89335, AI049869, AC006210, U14718, AI031447, AI035420, AP000307, M87916, L43392, AC006241, AC002984, U14687, Z82975, AI049843, AC004024, AC005971, AC007043, AI049776, AC007656, U47924, AP000047, U67724, AC005251,
HBMDK12	267	970684	1 - 348	15 - 362	

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HBM5B19	271	847800	1 - 252	15 - 266
HBM5K92	272	531156	1 - 114	15 - 128
HBM5O15	273	847795	1 - 425	15 - 439
HBM5O39	274	531158	1 - 206	15 - 220
HBM5T79	275	544889	1 - 119	15 - 133
HBM5TG5	276	932497	1 - 245	15 - 259
HBM5TM75	277	574515	1 - 317	15 - 331
HBM5TP84	278	703844	1 - 253	15 - 267
AL150796, AA351893, AL982994, AA847341, AA778580, AA455202, AL734193, AL791227, AL732911, AL884404, AL734158, AA581317, AA636077, AA843542, AL815425, AL002863, W45215, M77964, AL890283, AL207534, AL867012, AA729628, W02419, R79396, AL816073, AC006084, AC004820, AC002369, AC002558, AC005383, AC007014, AL009181, AL050308, AC003071, AC004659, Z98950, AL132987, AC002330, AC005200, AL049699, AL023049, Z95116, AL021918, AL1020997, AL109613, AC002492, AC004816, AL096701, Z85987, AL035089, Z82190, AC007501, AL049828, AC005775, AL031368, AL246603, AL021394, AC005553, AC005535, AL022322, AL121658, AL049838, AC005529, AC006211, AC005102, AL031587, AL049830, AC005574, AC002115, AF124730, AL079342, AF111168, Z83843, AC007686, AC000025, AL000582, AC005527, AL022578, AC005630, AC001644, AC004386, Z97876, AL117344, AC005089, AC005037, AC002316, AL133275, U51561, AP000275, AP000037, AP000105, AL020996, AC004987, U91327, AL049643, AL049709, AC005099,				
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HBMTU03	279	924979	1 - 292	15 - 306	<p> AL021937, U73643, AC004073, AC006509, Z93023, AC000011, AF111169, AC007283, AC011311, AC004812, AF001552, AC005372, AF000501, AF006501, AL243213, AL122023, AC004686, Z73417, AF001508, AC005252, AC008014, AC007066, and AF011889, T41134, H61871, AL962094, H65010, AI915081, T83057, AL445774, N54397, H62550, AL0370470, AA135761, H68343, AA338575, AA847064, D51809, AA161305, AI187148, AA371410, R70883, R70884, AA747757, F33037, AA722146, D51877, AA133332, AI571161, F17529, AI559304, AA584594, AA633039, AA298365, AA584495, R92563, AA297006, AW276683, AA664126, R19199, T48723, AA838091, AA602971, AA584183, AA935409, W39287, AI619994, AA714011, AW245860, AA719523, AI800426, AA445951, AI697242, AA653291, AW237905, AA236867, AA487209, N27874, H63660, AA583386, AI049955, F35684, AA587215, AC002091, AL024498, AC006512, AL031597, AC005982, AC006487, AL022165, AC004000, AL049856, AL135744, AC007565, AC003042, AC006023, AF217403, AC004752, AC002492, AC007193, Z98200, AC005003, AF196970, AL121603, AC006211, AI109798, AC005324, AC004821, AL022315, AL020997, AC005089, AC005914, AC006432, AL022302, Z93023, AC004854, AL133245, AL050332, AC008072, AC002470, AL034421, U29953, AC005736, AL096701, AL031681, U66536, AC007792, AC005670, AC004098, AF111168, AC005837, AC007774, AC002073, AF196779, U89337, AC005682, AL109952, AC005921, U91326, AC005225, AC005081, AC004383, AC005940, AC005531, AF000503, AL022336, AF053356, AC005391, AL031053, AC005844, AL009179, AC006241, Z98304, AL049776, AC005330, AC004967, S42653, AL034429, AF045555, Z85987, AC00120, AC005911, AC004531, AC005029, AC005015, AC005562, AF001549, AL009181, AL034420, AC005519, AC005318, AF000030, AF000212, AP000134, AC005800, AC004491, AL031311, AL035400, AL031447, AC004552, AC006071, AC005899, AF196972, AF207550, AC005696, AL049757, AP000704, AC004034, AC016027, AC006001, AF134726, AL022149, AL031432, AC004955, AC006057, AC005231, AC005747, AC016830, AC005484, AC002477, S79836, U73647, U11297, AC005520, AC004686, AL022311, U80017, AL078581, AC006480, L48038, AL031295, AC002544, M63544, AF181896, AF130249, AF190465, AC004477, AL049761, AC004452, AL035671, AL136295, AC000062, AC005726, AC005786, AC003031, AC007308, AC005808, AC003041, AC006101, AC002116, AC006387, AC005829, AC005277, AC005091, AC005924, AP000116, AP000510, AC006285, AL139054, AC002312, Z97353, AC007327, AP000251, AC004812, AL133243, AL031670, Z97183, AP000512, AL049557, AC004583, AL078639, Z97832, AC003013, AC006441, AC004895, AL023575, AC004655, Z99128, AC004858, AC005568, AC006035, AL009183, AC004598, U47924, AL033392, AP000350, AC005332, Z82201, AC007685, AC005261, AL031737, AC006236, AL035422, AL031255, AC004217, AC000353, AC009308, U62317, AC004796, AL021366, AP001053, Z69837, AL109827, Z85986, Z81364, AL031595, AL034417, AC002378, Z69666, AL031985, AC005527, X55448, AC005598, AC004534, AC007993, AL031848, AC005632, AL034549, U95739, AL022326, AL121852, AC006115, AC004797, </p>
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HBMUTV58	280	806670	1 - 651	15 - 665	
HBMUTX29	281	689834	1 - 139	15 - 153	
HBMUTX84	282	537385	1 - 338	15 - 352	Z93017, and AL009181.
HBMUTY82	283	523728	1 - 316	15 - 330	
HBMUA62	284	557828	1 - 330	15 - 344	AI064768, Z98753, AL031681, Z95703, AC000354, AC007036, AL135746, AL109653, AP000516, U82672, AL133512, AL049648, AL033530, AC004986, AC002357, AL049554, Z83850, AC006152, AL022164, Z75895, AC010349, AL022310, AC004191, AB014088, AL096803, AL021812, AC002069, AC011604, AF121898, AC005323, AC006354, and AC004930.
HBMUD12	285	574796	1 - 306	15 - 320	AL122070.
HBMUF60	286	740606	1 - 311	15 - 325	AC007536.
HBMUG57	287	735024	1 - 303	15 - 317	
HBMUH62	288	752244	1 - 329	15 - 343	AL096791.
HBMUI84	289	531159	1 - 243	15 - 257	AB12718, AC005023, Z95118, AC005041, and AL034548.
HBMUK59	290	712591	1 - 462	15 - 476	
HBMUN30	291	693337	1 - 559	15 - 573	AF015720, AJ229041, AC005829, AL031283, AC000134, and AL031255.
HBMUO10	292	953933	1 - 316	15 - 330	
HBMUO12	293	417210	1 - 178	15 - 192	AL022313.
HBMUO90	294	928078	1 - 311	15 - 325	
HBMUP35	295	531101	1 - 236	15 - 250	
HBMUT83	296	793052	1 - 462	15 - 476	AW080842, AH126237, AA033525, AI288602, AA070152, AI200312, AW293916, AI738708, AA033576, AW182578, AA961647, AA808104, AA884100, AA410505, AI635980, AA580797, AA748547, T71568, AI004853, AA975024, AI674097, AA988905, T82022, AI133609, AL137420, and Z94722.
HBMUV03	297	924916	1 - 394	15 - 408	
HBMUY32	298	959968	1 - 234	15 - 248	
HBMU296	299	574522	1 - 208	15 - 222	AL020995.
HBMVA83	300	529815	1 - 275	15 - 289	AL043165.
HBMVE14	301	545170	1 - 685	15 - 699	AA160290, AA337550, AW377670, AA046565, AA447158, W42824, and N21687.
HBMVIT9	302	781686	1 - 227	15 - 241	AC020663.
HBMVY94	303	574511	1 - 191	15 - 205	
HBMV002	304	920759	1 - 598	15 - 612	AL109839.

HBMAWA31	305	529678	1 - 406	15 - 420	AW291592, AA135499, AI949732, AI567157, AI040759, AI682731, and AA764743.
HBMAWA57	306	528663	1 - 202	15 - 216	AC002470.
HBMAWI35	307	706033	1 - 367	15 - 381	
HBMAWI01	308	959223	1 - 635	15 - 649	AI621074, AA648509, AW103842, AI133256, AF118079, and AI133216.
HBMAWI30	309	936058	1 - 309	15 - 323	
HBMAWI91	310	529837	1 - 202	15 - 216	
HBMAWQ85	311	765109	1 - 397	15 - 411	AW377503, AA007382, W23548, AA001311, H53191, and N78201.
HBMAWV93	312	574801	1 - 439	15 - 453	AC004223.
HBMAWX74	313	573336	1 - 310	15 - 324	
HBMAWZ14	314	573335	1 - 311	15 - 325	AI436109, H27387, AI889289, AI027575, N79584, AA828426, AW014938, N79587, AI174444, AI143425, AW247147, AA826017, T59414, AW087276, AI434510, AI913074, AI351503, AI200849, AI921728, AD22784, H11717, AD46366, AI936789, AA281074, AI093047, AW004642, AI826923, AA857401, AI313190, AI589862, AI581002, T66176, H14297, AI313169, and AI658705.
HBMAWZ16	315	712832	1 - 482	15 - 496	
HBMAWZ94	316	573348	1 - 334	15 - 348	
HBMAXE31	317	573323	1 - 298	15 - 312	
HBMAXE47	318	573324	1 - 66	15 - 80	
HBMAXXG08	319	959766	1 - 405	15 - 419	
HBMAXXH68	320	571361	1 - 584	15 - 598	
HBMAXL10	321	968054	1 - 385	15 - 399	
HBMAXM65	322	925570	1 - 467	15 - 481	Z55829.
HBMAXM39	323	705578	1 - 348	15 - 362	AI054090, AI246061, AI284543, AA297207, AI249853, AI251241, F33126, AI254770, AI133514, AI251944, AI251034, AI251284, AI250552, T93105, AI690497, AA502098, AI300054, R51582, AI160786, AI223626, AA779667, AH21723, AI119156, AI119182, AW019964, W63553, AA378207, W81372, AA714011, AI866970, T08386, AW303098, AI570019, AI749306, AA558366, AW069227, AA492114, AA664126, AI368873, AA805989, H86579, AI889579, AI634187, AI457313, AA772704, AA745628, AA582746, AA491770, AA938727, F35684, AA657910, AA837771, AA831408, AI619994, AA584493, AA769141, AA302934, F95822, AA587215, AI858272, AW161016, H78984, W95552, AA078128, T64444, AA890060, T39230, AA568747, T51556, AA973913, AA244406, AW236277, N25079, AW392414, AI134940, AI110760, T61928, AW169390, U64602, AI650702, AA122310, AC007406, AI022726, AI196972, AC005881, AI022320, AC006270, AF178030, AC006576, AP000501, AC004813, AC009248, Z99128, AC005899, AC012627, U82828, AC006084, AC008123, AI049694, AI109963, AC002425, AC005157, AP000011, AI031432, AF196779, Z98304, AC005291, AI135744, AF165926, AC005516, AC005529, AI133246, AC004812, AC005519, AC005082,

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HBMXN69	324	731274	1 - 356	15 - 370	AI934342, AI652289, AI749542, AI708414, AI659752, AA521117, AI685658, AI469153, AA810054, and AA749006.
HBMXO08	325	959768	1 - 336	15 - 350	
HBMXP90	326	574802	1 - 576	15 - 590	AI206408, AI765081, AW117539, W76554, W47134, AI282130, R00077, AW139096, AI970492, FI0866, A W003300, AI4692386, AI473105, AI699748, R38163, AP0007132, and AC006055.
HBMXR44	327	693123	1 - 400	15 - 414	AA094354, AL120141, U49973, Z99128, DR3253, AP000150, AP000009, AC007869, AC007297, AL031781, AL022333, AC018633, and AC004382.
HBMXS38	328	706039	1 - 654	15 - 668	AA806368, and AI811425.
HBMXU37	329	787155	1 - 512	15 - 526	AA354804, H95288, and AC004472.
HBMXW13	330	657241	1 - 408	15 - 422	AL035461.
HBMXW73	331	764440	1 - 338	15 - 352	AA634933, and T63384.
HBTAE07	332	955607	1 - 543	15 - 557	AA618452, AA478355, AI284640, AA493605, AL046409, AA453558, AI133297, AL045808, AL046156, AI270117, AI345157, AA490183, AI583283, AW275510, T06754, AW438555, AI499588, AW149313, AA584167, AA775143, AA836811, AA483929, AI042753, AA938105,

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HCFB14	347	658542	1 - 233			and AF217403.
HCFB14	347	658542	1 - 233	15 - 247		AI952593, AA402934, and T24885.
HCFB14	348	850449	1 - 141	15 - 155		AA680371, and T85563.
HCFB14	349	953506	1 - 286	15 - 300		AC005969.
HCFB14	350	870890	1 - 551	15 - 565		AI613235, AA903469, AA813305, F25776, AW071554, AW150820, AW194200, AI983597, AI246999, AW004802, AI264662, AI282522, AA282330, AA229754, AA526614, AI365012, AI299507, AI918967, AI553849, AI560300, AI950742, AW075387, AA868647, AA674712, AI690364, AA411518, AA713800, AA953331, AI094450, AA682774, R96820, AA302484, AA872093, AI300639, AI015741, AA130713, AW262508, AI051521, AA496620, AA496495, T24559, Z38471, AA736839, F31462, F18178, AI350873, AA805472, AA988865, AA496495, T24559, AI081865, AI144428, H61569, AA373811, AA229480, AA132945, AA703237, AA229962, AI690505, AA745775, AI720505, AI453250, AW009901, AW015954, AW118526, AI249388, AI282565, R56834, AI219656, AI285115, AI369774, AA461097, AW130721, AW339140, AW273429, AW148657, AI538694, AA065282, AI866733, AI874208, AI195700, AI805844, AW008035, AI829142, AW337251, AI983830, H46569, AI814591, AI818220, AW269978, AW168266, AI186921, AA229233, AI610303, N34882, AA832328, AA923506, AI078009, AI301063, AA670351, AI203695, AI339100, AA987523, AI803837, AI751711, AI445423, W94943, AA449775, AA280728, AI017038, AW276596, AI423558, AI828679, AA677814, AI954092, W68425, AI754933, AI799656, AI092937, AI277972, AW274402, AI310725, R59097, AI279557, AI310726, AW410249, AA526185, AA573897, AI078388, AI741564, AI147456, H98073, AA410004, AI300518, AA526998, AI721118, AA522451, AA508660, AA004278, AW182880, AW411240, AI953077, AA533655, AI283484, AI970703, W90665, H56058, AI120205, AI0734, T73441, AI591031, AI741030, AW270071, AI827198, AA628743, H25535, AI972733, AI927014, T51235, N91829, AA853526, AI860745, AI887607, AA580297, AI348361, R56835, AA229196, AA858412, AI102712, AA228723, AI535963, H26397, AA526103, AW189969, AA229458, AA644220, D25820, AW410257, AA557419, AF151822, AF176006, AF189289, and AF192559.
HCFB14	347	658542	1 - 233	15 - 247		AA223831.
HCFB14	348	850449	1 - 141	15 - 155		AF172244, and Z74023.
HCFB14	349	953506	1 - 286	15 - 300		AI127475, AI871007, AA142876, AI523587, AI830621, AW134689, AI825831, AA773904, AI862655, AI143146, AI768600, AA576383, AI307774, AW274750, AI916645, AA633463, AI334590, AI867665, AI867677, and AW152392.
HCFB13	351	576018	1 - 330	15 - 344		
HCFB13	352	576669	1 - 289	15 - 480		
HCFB13	353	959617	1 - 289	15 - 303		
HCFB13	354	576126	1 - 628	15 - 642		AA553332, AA343810, AI354333, AA496309, AA745302, F01222, N70957, AA757869,

AA584597, AW277135, AA297698, AA532875, AI146266, AW249720, T30864, AA484256, AW084161, AA295874, AA295865, T63747, AI167549, AA229842, AI866971, AI096766, AC005225, AI133163, AC003663, AP000501, AC004927, D87675, AC005237, AC006285, AC005089, AI031587, AC005215, AF111168, AI031176, AI034429, AI109801, AI121655, AC004821, U07561, AP000359, I78833, AP000555, AI133241, AI022323, AC016025, Z95114, AI117258, AP000343, AC002432, AC004216, Z95017, AI031276, AI035071, AI050302, AI049569, AP00263, AC002395, AC005483, AP000036, AI049692, AC005387, AI096791, AP000088, AI133448, AC000397, AC005808, AC006315, AI022163, AC002106, AR004690, AC006430, X87373, AC005358, AC004983, AC005621, AC009069, AI096703, AC008150, AC005755, AC005102, Z98884, AC006211, U82757, AC005740, AC006128, AC005527, AB016897, and AC004476.				
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AI028522, AI040333, and AI055988.				
F19258, AI820743, AI003172, W00516, AI003743, AA551509, AI038785, AW104748, AI365988, AA635417, AI205126, AI762575, AA229785, AI914706, AI350211, AA584749, AA557325, AA483204, AI962050, AA340003, AI917271, AW265294, F29989, AW166815, AA077935, AI358229, AI904894, AI567674, AW339687, AA856981, AI635272, AI815000, F26576, AI474713, AA973575, AI569086, AW080134, AI038279, AW337985, AA515051, AI079910, AI133636, AW130799, AI445436, AI890052, AI963786, AI929531, AI079645, AA482711, AI469003, AI433187, AI890923, AW162049, AI042856, AI679782, AI713815, AA077817, F31619, AA344959, AI119391, AA579184, AA077952, AI041368, AW440836, AA558269, AW029038, AW118011, AW105538, AI625244, N95715, AI040913, AW088202, AA228329, AI421213, AI471729, AI358343, AW003434, AI866807, AW264969, F36273, AI048144, AI499094, AI051551, AW069807, AI049722, AI339850, AW193432, AI284454, AW074398, AI149915, AA904218, AW406755, AI041412, AI3088616, AI244254, AI120674, AA340960, C06327, AA365587, AI064952, AW265197, AI068626, AI046746, AI547286, AA743956, AI635515, AA228420, AI82907, AI837755, AA339076, H88666, AI251002, AW75664, AI305766, AA639025, AI01270, AI053535, AA745410, AW338500, AI963720, AI761471, AW327360, AI563873, AI468134, AI366035, AI922840, AI886060, AA078483, F31204, AI311664, AA826032, AI590038, T12272, AI013344, T29180, W49488, AI610159, AA533138, AI934307, AI516326, T55510, AW407220, AI720141, AI601218, AA3381665, AA515128, AA365144, AI286264, C05755, AI688846, AA658235, AA826303, R89296, W38648, AA580662, AW131034, AI291047, AI935827, AI918421, N58729, AI886365, AI827234, AW151016, AW023672, AI821776, AW157005, AW193265, AI028510, AI613280, AW103239, AW419118, AA987962, AA669961, AA843450, AI637587, AI082510, AI133986, AI951889, AI951928,	15 - 437	1 - 423		
	15 - 315	1 - 301		
	15 - 477	1 - 463		
	15 - 340	1 - 326		
	15 - 484			
HCFB039	355	835926		
HCFB076	356	577218		
HCFB92	357	576864		
HCFB525	358	828076		
HCFB573	359	506244		



AA732212, AA659774, AA528441, AD061334, AD291823, AA492244, AL1807372, AL124660, W26042, AL127900, AL031303, AL039809, H13868, AL054246, AL136034, AL054389, AL0802526, AL110688, AL068745, AA457637, AL1355387, AL171481, AL1890928, AL053476, AL0533774, AL1890570, AL068650, AW276829, AL1038990, AW327961, C06458, AL0546409, AL1537233, AL190591, AA4489775, AA443065, AL1588856, AW327960, AL1879900, AA115968, AL1926846, AL177861, AL148265, AL1863283, AL1886176, AA364488, AW264973, AW192199, F13749, AA225195, AW238016, AL1135643, AA535661, AA601492, AL1537955, AL1466011, AW102955, AA148489, AA715606, F35659, AW477889, AA364567, AL149874, AL182467, AL1719014, AC005694, AC005527, AC005529, AC007687, AC004814, AC005040, AL023574, AL0494589, AC004617, AR060472, U29953, AC005924, AL109733, AC005954, AC004651, AC004029, AL13246, Z97630, AC005225, AL133297, AC006441, AC007436, AF024548, AL002295, AC007845, AC005177, AC006285, AC005772, AC016025, AC008372, AC004592, AP000358, AP000934, AP000561, AC002430, AF165926, AC007384, AC007320, S48196, X53795, Z77894, AL132992, AC005222, AL021977, AC004506, AC006011, AF015162, AC004189, AP000563, AP000133, AP000211, AC000062, AL0335695, AL034400, AC006518, AL121694, AC005696, AL049836, AF029308, AC003104, AL031286, Z93023, AP000855, AL023803, AL022323, AC005229, AF002991, AC006537, AC003048, AC005164, Z82203, AC005999, AL022576, AL033381, AC008126, AP000359, AC004186, AC003959, AL021878, Z98950, AC003003, AC007051, A39972, AC004806, U12580, AC002462, Z98744, AC004866, AC005399, AC007671, AF196779, AC004019, AC005341, AL031709, AC006132, AC005156, AC005207, AC005754, AL121578, L13713, L13714, S75337, AP000305, Z73496, AP000047, AP000115, AF064863, Z98754, AC005922, AL034549, AC006511, AC002041, AL035402, AF102099, AC006512, AB002329, AL033544, AC005387, AL035450, AC006312, AC006221, AC003088, AC005661, AF164343, AP000049, AP000193, AF043945, AC005064, AF064866, AP000311, Z73986, AC005099, AP000117, AP0000352, AL021808, AC007551, AC006480, AC007262, AC006374, AC007461, AC006241, AC005832, AC007319, AC006249, AC007543, AC004382, AC004789, AF140763, Z47046, AC005574, AC008165, AF031078, AC003001, AF030876, AC007558, AL078644, U47924, S75201, AL022393, AC006373, Z81369, AC004741, AC004808, AL009177, AL021939, AL079295, AC022517, AC002487, AF015160, AC005610, AF015171, AF015167, AF015170, AF015169, AC001528, AF015168, L81648, AC006048, AC005262, AC003030, AL049859, AP000509, AC006262, AL096771, AC004167, AC008134, AF064857, U12583, M96868, X13921, AB014460, AF015725, AC002323, AC005525, AC002105, AC005786, AC006456, AF190465, AP000495, AL109618, Z82900, AC006150, AC005048, AL030112, AC005589, AC004861, AC002347, AL050343, AC004103, AC005913, AC000111, U07000, AC004832, AC018767, AP001037, AC004816, AC004945, AC007065, AC005822, AC005084, AC004168, AC004831, AL031121, AC000052, AC007055, AL109865, AC000134, AC005406, AC006449, U18392, AC006352, AL034424, Z69921, AF060568, X04981, X71874, AC003966,				
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HCBU01	360	916703	1 - 543	15 - 557	AC001422.
HCBU38	361	707620	1 - 273	15 - 287	AA654338, R11792, R18553, AA488229, and R33569.
HCBU84	362	573546	1 - 447	15 - 461	AL817736, AL084181, and AP018987.
HCBU85	363	576010	1 - 265	15 - 269	AP000315, AP000118, and AP000165.
HCBUW13	364	828042	1 - 458	15 - 472	Z42409, R59109, W78198, AW276841, R14684, AC004013, AJ010770, AB018346, AF091711, AF083037, AB019691, and AJ131693.
HCIFY02	365	920340	1 - 409	15 - 423	AL859280, AW392291, AL342622, AL598003, and AW167154.
HCFA31	366	725700	1 - 421	15 - 435	R09578, AA676513, H10338, AA313594, AA333602, N25123, T32628, AL135366, N56063, Z42875, R47343, AA411514, T55290, H40743, H40750, AA402101, AA496316, AA320228, AA040891, AB017196, and D87451.
HCFCB67	367	751764	1 - 445	15 - 459	AA862312, AL564185, AA702605, AA469451, AL368862, AL628288, AL904586, AL904594, AT742168, AA847499, AL042667, AL042670, AL679294, AW169038, AA481887, AL679871, AA827771, AL143840, R03642, AL623364, AP003626, AC006277, AC005534, AC002542, AL049759, AL021940, AL031848, AC005512, Z93930, AL021877, AC005488, AC003666, AL096712, AC004019, AP000133, AP000211, AL050332, AF134726, AC004913, AC007676, AP000503, AL034420, Z99716, Z97632, AC005280, AC007536, AC004596, AC002316, AC007731, AC005500, U47924, AC006441, AL033527, AC004526, AC000025, AL096701, AL022336, AC005971, L47234, AC008124, AL035420, Z95114, AF064861, AP000140, AC005529, AC004033, AC008372, Z98742, AC000120, AL008718, AL022320, AC005899, AF190465, AC005696, AL049776, AL109827, AC006207, AC005015, AC003977, AF048729, AF109907, AP000501, AC005932, AL135744, AL133371, AC009247, AL034429, Z82190, AF031078, AC004150, AF030876, AC002115, AL132987, AP000088, AC006121, AC005300, AL133245, AC007541, AC003950, AC004825, AL035703, AC009044, AL133233, Z84496, AC002470, AL022313, AC007308, AC006487, AC002558, AL022163, AC002725, AC004821, AC006455, AL022322, AC006273, AP000432, AL050318, AF111169, AC007878, AP000513, AL049869, AL096699, AC007066, AC005821, Z98044, AL031680, Z83819, AC005520, AP001052, AL031780, AC005625, AC007664, AC005871, AC006312, AF002223, AL031597, AC002477, AL031005, AL031846, AC005255, AL021546, AC005060, AP000030, AC006538, AC005067, AC005839, AC006023, AC005232, AC008249, Z93020, AC002543, AL033683, AC007546, AL020997, AC005527, AC005484, AC005881, AL021391, AC005841, AC006111, Z84480, AB017602, AC005399, Z82198, AC005940, AC004228, AL035079, AC004796, AC005326, AL008635, AF001549, AL139054, AC005304, AL034417, AL121653, AC005237, AL079342, AC004750, Z82097, Z99128, AC005924, AF108083, AC000118, AL133163, AC005412, AC005920, AC005568, AL109980, AC004841, AC005546, AC004662, AP000049, AP000116, AC002472, AC008122, AC004832, AC003684, Z85987, AC004686, AF053356,

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					AC005776.
					AC009731.
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HFCCS57	368	577375	1 - 390	15 - 404	
HFCC68	369	753089	1 - 276	15 - 290	
HFCC94	370	670538	1 - 431	15 - 445	
HFCD44	371	883973	1 - 396	15 - 410	
HFCD47	372	894415	1 - 382	15 - 396	
HFCD47	373	720400	1 - 267	15 - 281	
HFCD21	374	671028	1 - 179	15 - 193	

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HCFCM12	375	970835	1 - 846	15 - 860	
HCFCN66	376	850422	1 - 422	15 - 436	

AA487209, AI217162, AA354695, AI049504, F35684, AW195271, AA420703, AW105729, AW192518, AA429481, AA541532, AW073934, AI310343, AW194046, AA135761, AI889579, AA410788, AW347174, AI216151, AI366555, AA573000, AI050076, AA553594, AA022894, T48723, AW341882, T47075, AI082510, AA669961, AA664126, AA568314, AA745628, AA513884, AW419389, AA579184, AS25253, AI251241, T41134, AW302017, AW023111, AA484892, AW089950, AW341955, AI278972, AA704393, AI356440, AI306717, AW6768179, AW327751, AI521019, AI984168, AA947370, AA349606, F23262, AI254779, AA365586, AI295531, R67701, AI872229, AI268818, AW147145, AI340832, AI031759, AA738014, AA721645, T93105, AA278496, N71619, AA715351, AA728861, AI572680, AA493840, AI300054, AW169038, AI049722, AF111168, AC005280, AI050321, AI049843, AF003626, AI133246, AC004834, AP000030, AC007510, I34294, AP000556, AI022333, AC005015, Z98051, AI031985, AI022326, AC004491, AC005696, AI031280, AC005327, AC005005, AI035587, AC005841, AC006275, AI031121, AC004552, AC004623, AC005288, AI008726, AC004990, Z69719, AC003098, AP000354, AP000298, AB001523, AC006241, Z68276, AF039907, AI133245, AP000252, AC005031, AC005839, AC005559, AI133448, AC000553, AP000212, AP000134, AC004999, U80017, Z85996, AC005914, AC004254, AC003688, AC005037, AI139054, AI096701, AC006288, AC005632, AF001549, AC000044, AP000112, AI096775, AC002381, AC002401, AC007731, AC005261, AC005500, AC005901, AP000691, AC007688, AC007690, AC005902, AC008154, AC006597, AI035413, AC006487, AC006539, AC006370, U81031, AC000028, AC002375, AP000692, X54156, U94788, AI021155, AC007565, U73330, AI022398, AC007421, AI008730, AC005231, AC007766, AC006511, AI034395, AC003962, Z97056, AC004973, AC002472, AC002477, AC002119, AC006450, AC006042, AC006468, Z69917, AI049873, Z98885, AC005972, AI109613, AC005788, AI031393, AC005913, AF045555, AI246003, AC004462, AC004796, AP000688, AI050318, AI031588, AI035652, AC004878, AC004856, AC003007, AF064866, AC009247, AP000725, AI031255, AC003690, AC005365, AI031229, AC006538, AI031685, AC006116, AP000512, AC004150, AI008719, AC006544, AC004659, AC004771, AC004643, AC007686, AI121754, AP000501, AC004752, AF053356, AP000300, AI080317, AC004103, Z84469, AP000116, AC005800, Z82208, Z93017, Z98047, AI133355, AP000151, AI049780, AI008720, AP000511, AI049631, AC007243, AI034420, Z96074, Z82244, AC003071, AC005004, AC007312, L77570, AC007546, AC006455, AI035089, AC002288, AC005207, AC005520, AI121655, AI109799, AI021808, AC002312, AC007664, AC005828, AC004590, AC008989, AC004033, AC005874, AI033471, AI035455, AC004983, Z97989, AC007226, AP000152, AC007429, AC002527, AF064857, AC003043, AC008064, AF001550, AC004797, AI035695, AC005736, AC003667, AC002492, AC011456, AC002565, AC005220, AC004966, AC005778, AC004019, AC008045, AC004814, AC006084, AI121603, AI024498, AC005324, AP000113, AP000045, AC005837, AC005777, AC002363, AC005239, AC008044, AI031667, Z93241,			
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HCFCN81	377	576871	1 - 581	15 - 595	AL078381, AC004851, AL031663, AL031282, AL009181, AC000025, AC004650, AC005180, AC004859, AC006464, AF000115, AC002476, AC006101, AL117354, AL031284, AC005535, AL133312, AC002390, AL0031848, AC006537, AC006271, AC005723, Z83840, AC004707, AL034402, and AC008372.
HCFCN81	377	576871	1 - 581	15 - 595	RI3709, Z44811, and AA084016.
HCFCP14	378	577277	1 - 318	15 - 332	AL043121, H26563, A4774273, and A4480145.
HCFCP31	379	764750	1 - 431	15 - 445	AL033547.
HCFCR76	380	862688	1 - 552	15 - 566	AL033043.
HCFCX73	381	575958	1 - 349	15 - 363	H80303, AL809174, AC005091, AC004671, AL031283, AC020663, AL034417, and AC002527.
HCFCB13	382	576709	1 - 325	15 - 339	
HCFCDD48	383	720938	1 - 363	15 - 377	
HCFCDE10	384	961270	1 - 411	15 - 425	
HCFCDE19	385	671507	1 - 550	15 - 564	AA126608, and AC003959.
HCFCDE79	386	575996	1 - 350	15 - 364	
HCFCF28	387	968304	1 - 344	15 - 358	
HCFCFD28	388	850564	1 - 517	15 - 531	AW294229.
HCFCFD78	389	773685	1 - 659	15 - 673	AA284357, AL161251, AA703386, AL144156, AL080716, T95314, H44601, R54003, R53410, AL070367, T95366, A863960, AA705879, AA444145, AA443965, AL045360, AL819631, AB862146, AL119399, AL363575, AL289542, AW020397, AL043168, AL253379, AC002056, AW162194, AL698391, AL633125, AA587590, AL051088, AL046466, AW151893, AL638644, AL345415, AL890907, AL345612, AL590043, AL589428, AL042382, F27788, AL037454, AL800341, AA806719, AL345416, AL565172, AL043152, AL679550, AL567582, AL802542, AL042544, AL500661, AW089844, AW274355, AL884318, AL079794, AL119457, AW29108, AL637584, AL889189, AL470293, AL041862, AW152182, AL345688, AL923989, AL567513, AL501059, AW007309, AL479292, AL538850, AL866469, AL890391, AL538764, AL036187, AL817523, AL702073, AL473536, AL119324, AL33500, AL499890, AW129264, AL636588, AL540458, AL954183, AW129659, AL673363, AL040241, AA808175, AL110306, AL267162, AL433644, AL870192, AL969655, AW301344, AL038505, AL254814, AW059766, AA580663, AL446775, AL567769, AL469425, H89138, AL491710, AL270183, AL690813, AL433157, AL589134, AW021717, AL539800, AL119511, AL538885, AW022300, AL046618, AL828679, AW104056, AW021178, AL037582, AL245008, AL037602, AL540674, AL685080, AA975952, AW079572, AC008151, AL4146191, AC005968, AL050309, AC007458, AL050322, Z82206, AL050306, AL031732, AC005296, AC007392, AC007298, AC002464, AL035258, AL031904, U95739, AC018769, AC018767, AC002287, and AC009286.
HCFLB44	390	576679	1 - 339	15 - 353	AL697165, AL434288, AL642239, AL818876, AA970105, AL271514, AL571352, AA411035.
HCFLB95	391	945122	1 - 576	15 - 590	

HCFLP96	392	579039	1 - 330	15 - 344	AI371320, AA65735, AA134979, AI133257, AI536609, AW248707, AI198061, AW182002, AI261681, AI991804, AA344380, AI810573, AI685434, AA293139, AI699206, AA652700, AI688845, AI458014, R60967, AW007141, AA419241, AI089210, AI369965, AA489594, AW383812, AI739141, AC004707, and DI3623.
HCFLG84	393	771243	1 - 425	15 - 439	AA978266, AL049780, and AC007055.
HCFLI49	394	722269	1 - 525	15 - 539	AA312278.
HCFLJ40	395	576068	1 - 324	15 - 338	
HCFLP31	396	698139	1 - 460	15 - 474	
HCFLR55	397	576043	1 - 243	15 - 257	Z84475, and AC006924.
HCFLR83	398	576054	1 - 576	15 - 590	AL043019, AL042433, AI142132, AW372827, AI134902, AI142137, AI134524, AI119401, AI119443, AI142139, AL042896, AL079687, AL039912, AI134525, AI119522, AI119396, AL042978, AL042544, U46351, AI134536, AL042965, AL042975, AI119418, AL037205, AL042984, AL042542, AI119464, AL043033, AL043029, AI042551, AI119511, AL043003, Z99496, AR069079, AR043113, AR066494, and AR060234.
HCFLT42	399	576040	1 - 396	15 - 410	AA281808.
HCFLU12	400	970849	1 - 506	15 - 520	AA096816.
HCFLW38	401	964870	1 - 513	15 - 527	AA082673, and Z36960.
HCFLW42	402	670519	1 - 437	15 - 451	AI040051, AW438542, AI824541, AW021917, AA130647, AI004591, AI270476, AI061313, AA225044, AA878140, AW265990, AA582554, AW167154, AW103383, AI623563, AA862243, AA653139, T50676, AW105729, AA665181, AA610509, AI821044, AI039187, AI590458, AW302048, AA570740, AA483606, AI275183, AA955031, AW075132, AA568204, AI536625, AA658844, AA574442, AI745473, AA879063, AI598003, AA601278, AI559645, AA528480, AA664604, AI292236, AA528390, AA613627, AI590499, AI338426, R94354, AA121777, AI276298, AI191418, AA970967, AI017251, AI791659, AI753365, AI859280, AA598545, AA579566, AA224995, AA584482, AI654285, R94288, AA347114, AI244356, AA581460, AA572683, AW161636, AA618316, R96643, AC005822, U50871, M87914, AC006512, AI035588, S42653, AP000555, AI313757, AC005399, AL049872, AF053356, AC005341, Z99716, AC005529, AC005057, AP000212, AF196779, AC005778, AI109623, AC005747, AC005899, Z69917, AC006965, AC002470, Z95114, AF134726, AI022069, AC005089, AC005907, AC004408, Z98884, AI022313, AF045555, AI009181, AI022069, AC005041, AC006480, AL049557, AI021978, AF187320, AC009498, AP000512, U85195, AI109952, AP000552, AC007685, AC007227, AC005391, AC007421, AC005288, U47924, AE000658, AL008726, AC006013, AC005588, AC002538, AC005225, AI139054, AC006600, AC004975, AI034555, AC005746, AC005484, AI021694, AC003665, AI035072, Z82901, Z82214, AI050308, AC006953, AC005082, AB022537, AC004099, Z97056, AI034420, X84664, AC007052, AC007686, AI034548, AI033521, AC004386, AC005562, AI096776, AF196969,

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HCfMD15	403	975075	1 - 657	15 - 671
HCfMD23	404	676003	1 - 324	15 - 338
HCfME27	405	576815	1 - 423	15 - 437
HCfMF47	406	973243	1 - 567	15 - 581
HCfMF64	407	773342	1 - 812	15 - 826
HCfMG14	408	576063	1 - 354	15 - 368
HCfMH12	409	970843	1 - 457	15 - 471
				AL046464, AL284640, AA649642, AA515435, AW440976, AW236342, AL264743, AW383634, AA350859, AL023696, F32894, AA483034, AL273185, AL688846, AL205126, AA318652, H64777, T63104, AA470985, AA365347, AA538697, AA535661, A053672, AA886584, A064864, AA077817, AL471481, AJ910609, AL231002, T07287, AA557879, AW193265, AW383542, AA605274, AA747472, AA513999, AW193432, AL334443, AW088038, AA593060, AW089810, AW272758, AW438643, AL350211, M62249, AL830390, AA177061, F36273, AL110770, AW601892, AL648558, R13151, AA229785, AL823782, AW276827, AL824562, AL590689, AL590938, AA714453, AW338086, AL046409, AL040313, AL608626, AF150152, AA331025, A1085719, AA368936, AL049722, AL281881, AW383608, AW383628, AA328591, T06556, AW383440, AA369477, AL431303, AW383586, AA720702, AL282336, F19012, AA364224, AW406447, AL986251, AW029038, AW383605, F24284, AA593247, AW383624, AL962050, AL341664, AW383606, AL281903, T40077, AL286356, AA653221, AL120674, AL537955, AW261871, AA252763, AL287528, AL653905, AL367401, AW419262, AL367420, AL890923, AL352078, T08638, F37169, AL291124, AL499938, AW272641, AL687962, AA366820, AL56799, AL049940, AA300016, AW272925, AW339568, AL929531, AL805380, AL418327, T40338.
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				AL46464, AL284640, AA649642, AA515435, AW440976, AW236342, AL264743, AW383634, AA350859, AL023696, F32894, AA483034, AL273185, AL688846, AL205126, AA318652, H64777, T63104, AA470985, AA365347, AA538697, AA535661, A053672, AA886584, A064864, AA077817, AL471481, AJ910609, AL231002, T07287, AA557879, AW193265, AW383542, AA605274, AA747472, AA513999, AW193432, AL334443, AW088038, AA593060, AW089810, AW272758, AW438643, AL350211, M62249, AL830390, AA177061, F36273, AL110770, AW601892, AL648558, R13151, AA229785, AL823782, AW276827, AL824562, AL590689, AL590938, AA714453, AW338086, AL046409, AL040313, AL608626, AF150152, AA331025, A1085719, AA368936, AL049722, AL281881, AW383608, AW383628, AA328591, T06556, AW383440, AA369477, AL431303, AW383586, AA720702, AL282336, F19012, AA364224, AW406447, AL986251, AW029038, AW383605, F24284, AA593247, AW383624, AL962050, AL341664, AW383606, AL281903, T40077, AL286356, AA653221, AL120674, AL537955, AW261871, AA252763, AL287528, AL653905, AL367401, AW419262, AL367420, AL890923, AL352078, T08638, F37169, AL291124, AL499938, AW272641, AL687962, AA366820, AL56799, AL049940, AA300016, AW272925, AW339568, AL929531, AL805380, AL418327, T40338.



AI702095, AW151896, AL041690, AI133164, AI186470, AI720431, AI148245, AI291268, AI58571, AI684208, AI840453, AW249835, AW383455, AW383629, AI084070, FI8974, AI431232, F31204, AI287651, AI537030, AI675367, AI632407, AI677668, F33511, AW082063, AA587604, AA704147, AA679672, AW276172, AA719805, AI282832, AI616815, AW168342, AW025031, AA441788, AA626404, AA491762, AA745410, AI434695, AW162049, AA443695, AI613280, AI754955, AI623898, AI339850, AI339440, AA338522, AI287451, AI133636, AI567674, AW406162, AI367471, AI801591, AI270117, AA515051, AI364020, AW022379, AA365302, AA079101, AA527975, W79504, AI341548, AI679782, T07431, AA100372, AA526779, AI904894, AW338292, AI354587, AI917271, AI281465, AI225254, AI538928, AI102047, AI613473, AI268812, AW383596, AA977743, AI079812, AW274349, W47444, AA664535, AA321311, AW023672, AW270270, AI371070, Z93784, AL049869, AC003983, AC004933, AC007056, AC005220, AL031846, AL035071, X87344, AC000067, AL035667, I51997, M87916, AI022324, AC006062, AC006055, AC006055, AI096867, AC004947, AC006212, X75335, Z84476, AB000882, U57005, U18393, AC004878, U18394, AL050308, X55928, U18390, X55932, AC005013, S70697, AC005251, X54180, AC005909, U57009, U57006, AC007126, AC005962, U91324, AL078463, U85195, S75337, M87919, S70694, AP000567, Z98236, AL032821, U02054, U02063, AC005348, AE00658, AL096773, AC004638, X55925, AC004963, AL133246, AC005015, AC005389, AF003627, AC004896, AC005246, AL034548, AL035681, S70707, AF147277, U18392, U02058, U18391, AC006925, AL031680, AC006370, AC004158, Z98946, AP000431, AB003151, AP000688, AC005502, AC002119, AC004537, AF196779, U18395, U14719, AI109733, D83989, AI049636, AC005207, AC005915, U14701, U14695, U14705, X55924, AP000346, U14699, U14702, U14710, U14685, U14686, U14689, U14691, U14692, U14707, L81648, AL021453, AC006057, AC005145, AC005297, AL049710, U14718, AC005023, AP000302, Z68165, AC004815, AC007919, X55930, AC003029, AC002056, AC006210, Z84474, AF090944, AF077058, AC006336, AC005019, AC002366, AL031311, X55926, AL133238, AL049835, AC004381, U18398, AC004890, U14708, U02048, AP000114, AP000046, AC005581, AC000124, U14703, U14688, U14687, AI035407, AC005544, AC005341, AP000193, AC007100, Z30993, AI121603, AC006417, AC004220, AF038458, AL008728, AP000030, AL031257, X55922, AF015156, AC007384, AF053356, AL049776, AP000311, AC005696, AC004222, AC006996, Z94277, AC005082, Z49816, AI008718, AC003013, AC007792, AF015147, AP000117, AC006241, AL008723, AC005971, AL078624, AP000017, AP001053, X54175, AL031347, AF161343, AC008709, AC003007, AL080242, AC005284, AC003763, AL008635, U63721, AC005552, AC004496, AL031589, AC008119, AC007421, AC006596, AF029308, AL022476, AC006026, AC005873, AC006536, U14700, AC004668, AC002086, AL080285, AL031770, AC004859, AC005332, U14684, AI04693, AC006511, Z99754, AF111169, AC005575, U18396, AI121653, AC005699, AF094481, AP000557, AC020663, AB020859, AC005003, AL022394, D42052, AP001043, AC004895, AL035494, AC005412,				
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HCNMFJ70	410	576096	1 - 342	15 - 356	AC005385, U91327, U66059, AC004799, AI031258, AC006292, AC004996, U07000, AC004006, AC004841, AI022318, AC004987, AC003075, AP000460, and AC005822.
HCNMFJ25	411	576081	1 - 256	15 - 270	AA493118, and AI135744.
HCNMFJ27	412	576094	1 - 361	15 - 375	AC006388.
HCNMFJ49	413	576098	1 - 409	15 - 423	
HCNMFJ62	414	576097	1 - 423	15 - 437	AI031594.
HCNMFJ63	415	506251	1 - 365	15 - 379	
HCNMFJ42	416	576667	1 - 451	15 - 465	
HCNMFJ81	417	506250	1 - 468	15 - 482	AC006406.
HCNMFJ07	418	953522	1 - 150	15 - 164	AC006978.
HCNMFJ064	419	805822	1 - 664	15 - 678	RI6166, AW245400, AI092564, AI298418, AI190180, AI135607, AA255476, AW341937, AA774687, AA232248, AI675174, AI356983, AA770006, AI500630, AI200144, AI339987, AW071871, AA350500, AA732754, AI086463, AA055479, AI080604, AI591153, AI090505, AI090526, AI619931, AI151262, AA765701, AI015327, AA173394, AA257977, AI857270, AW058653, AI858857, AI743631, AW131669, AI361482, AA171810, AA621676, AW072043, AA159603, AA165670, AA357206, AW070895, AI083788, AA643264, AA699650, AA373130, N29760, AW248832, AI401838, AI696781, AA086047, AI829320, AA232744, R44869, AI133807, AI089956, F09118, AI352487, AA369978, AA486761, AI182536, AI128868, AI699007, AA134215, AA977086, AI885043, AA232537, AA954867, AI086697, AA256882, AA457397, AA865872, AA757809, AA811925, AW377769, AA805830, AW006314, AI758593, AA045484, AI246878, AA421465, AI679033, AI587487, AI572423, T30157, AA515407, AW193414, AW085830, AI672912, AW196633, AA527495, AA568558, AA026270, AA594129, AI569433, AA864390, F03978, R51276, AW304405, AI017824, AI061053, AI074649, AW009091, AI566098, AA999878, AI888289, AI097100, AI587320, AW002779, AA725226, AI559525, AI017407, AI741332, AI911638, AI685232, AI890180, AW295035, AI991285, AW084565, AI859307, AI090794, AI744955, AW182337, AA844680, AA535324, AI014459, H28345, AA357685, AI143713, R35871, AW129646, AA457115, AW044140, R67967, R26888, AI660218, M79078, AI742893, AI436778, AI718841, AW292472, AI818656, AA421496, AA664765, AA621134, AI719132, H65810, N74909, AW087942, AA457447, and AI811113.
HCNMFJ62	420	954213	1 - 560	15 - 574	
HCNMFJ85	421	933017	1 - 298	15 - 312	AC006479.
HCNMFJ17	422	664132	1 - 475	15 - 489	AW362709, AI6165294, AI012376, and AI165281.
HCNMFJ30	423	772262	1 - 129	15 - 143	
HCNMFJ62	424	576446	1 - 336	15 - 350	AW002831, R69327, AA713735, AI118925, AA808982, AA745302, AA335519, AA429481, AW381847, AW381904, AA714073, AA364006, H43183, AA496309, AA577141, AA192366,

HCNFK43	425	973548	1 - 693	15 - 707	AL0207476, AA297698, AA676875, AA587078, AL015081, AA295865, AA295874, AW080215, AA367388, AA363027, RS2008, AA477517, T83057, AA224807, H89581, AW117723, AA663047, AA522500, AA439393, AA630122, H43771, AA532875, AL217985, AL342183, AT798047, AA441810, AA728939, AA715418, AA225358, AW157731, T07346, AC0077893, AA772704, AA513125, AA525807, R87275, AL21766, AL368732, AA715075, AL870453, AW074497, AL021368, AC000091, AL035405, AL022336, AF111168, AC008040, Z49736, AC004883, AC005829, AC007227, AC000378, AC006505, AC004851, AC005726, AC007308, AC008928, Z97056, Z95116, AC000353, AL133246, AC002126, AC006239, AP000555, AC002115, AL035249, Z98950, AC0007546, AL031230, AL031905, AC0007632, AC0047703, AC005914, AP000103, AP000032, AL133448, AL031591, AL251973, Z99943, AC005952, AL049758, AF196779, AL031848, AF002223, AP000704, AL021453, AC003042, AC002070, AF196971, U62292, AC006965, Z98884, AL021578, AC007637, AL023284, AC005088, AL117694, AC002511, AC005763, AL022238, AC005488, Z73900, AP000008, AC009516, AC006146, AC003663, AC006486, AL078581, AF196970, AC004821, AL031255, U95741, AF042484, AC004531, AC006111, AC005609, AC005874, AF134471, AL021977, AC002404, AL050308, AP000030, AC004583, AC004223, AC003108, AC005920, AP000269, AL135960, AL131016, AC004228, AC003957, AF030453, AC005753, Z93930, U63721, AL080248, AL035659, AC004687, AF111170, AL022312, D87675, AC004611, Z84469, AF077550, AL117344, AC009802, AL008715, AC008055, AL035086, AC004098, AL049872, AL117258, AC004805, AC002563, AC004644, Z82206, AC005102, AC005086, AC002477, AL031587, Z85987, AC006463, AL020997, U07000, AL022311, AF067844, AL009172, AL133445, AL049843, AF001549, AC004967, AP000212, AP000134, AC004125, AC005722, AC004030, AC004150, AC006163, AC005778, AC004760, M87889, AC005081, AD000092, AL049692, AC005924, AC005531, AF006501, AF064861, AC004794, AL023879, AC006312, AC005409, AC002565, AC010205, AC005206, AL049709, AC005899, AF196969, AC002400, AC006014, AF039906, AC004985, AC002470, AB023051, AC006449, AC005736, AC002663, AL008726, AC007363, AC005231, AC005972, AC004991, AC005755, AC006165, AL049793, AC006509, AC007565, AL031659, AF176815, AC007725, AC005331, AL121825, Z84466, AC002551, AL109798, AC002314, AC005244, AC004881, AL022396, AC005229, AF001550, AC005332, AC002492, AP000494, AC005667, AC005412, AP000689, AC007065, Z95152, AP000556, Z93023, AC007226, AL049776, AD000812, AB016897, AC002559, AC006088, AC005756, AL122020, AC004979, AC004983, U91323, AL132987, AL109801, AL049569, AP000509, AC004552, AC005011, AC005225, AC004770, AC005343, AF000014, AL031258, AL021154, Z98036, AL031284, AL049646, AL022320, Z93020, AC008116, AL031276, AC005786, AL031056, Z97630, AC004841, AC008134, AC004033, and AC004148.
HCNFK43	425	973548	1 - 693	15 - 707	AC005999, AL031012, AL078602, AC002485, AL022164, AL031429, and AC005539.
HCN055	426	576008	1 - 359	15 - 373	

HCFNQ04	427	613351	1 - 888	15 - 902	T57391, N26420, AW340665, A1827647, AA280976, AA521364, AW340711, A1217472, AA429950, AW274378, AW340146, A1970154, AA906042, A1290997, AW188032, AC006208, and A1003081. AA648299.
HCFQB11	428	967196	1 - 126	15 - 140	AA648299.
HCFQJ38	429	576005	1 - 302	15 - 316	
HCFQJ90	430	561625	1 - 529	15 - 543	A1801107.
HCFQJ82	431	576007	1 - 380	15 - 394	AA229738, and AA229023.
HCFQJ56	432	577114	1 - 385	15 - 399	T11456.
HCFQI11	433	967195	1 - 316	15 - 330	A1066646, A1375684, A1755202, A1720301, AW130427, L42230, AC002128, AC005808, AC005327, AL031965, and AC008994.
HCFOL96	434	796104	1 - 482	15 - 496	Z30202.
HCFOL18	435	575965	1 - 387	15 - 401	
HCFOP42	436	460824	1 - 537	15 - 551	AA480486, AA469230, H81700, AA468356, AA502532, AW238495, AA018923, A1537800, A1609972, AA021561, AA768179, AA608561, AA362349, AA229159, AW392414, AA857812, H86221, AA429481, AA829036, A1267356, AA728861, H99700, A1279417, AA610233, AA773881, AA599080, A1648514, N91711, A1738863, AA558404, AA459733, AA715351, AA601680, N41775, A1267450, AA601212, AW302017, A1185394, H84412, A1771455, N70449, AA564925, W28961, A1280535, AA573000, H24957, A1340858, A1718323, AA376896, A1687343, AW440358, AA654482, P00688, AA351808, AA197019, A1583466, A106232, A1251576, AA302661, AA297443, A1340700, AA302978, AA629852, AA228979, A1929796, A1933716, W63553, AA457754, AW328331, AA229823, A1253376, AW188742, AW150781, AA946848, AA507675, H67064, AA019003, AA7328330, A1932871, H59651, N28624, A1306717, A1137946, AW274191, AA610381, A1249365, A1041375, AA362348, H58293, B69819, A1282629, A1249688, AA515168, AA648569, AC005318, Z95326, A1035088, L44140, AC007993, AC004859, A1133163, AC007056, L77570, A130343, Z81007, A1080243, AP005003, A1021707, AB002345, AC004856, A134726, U73644, AC004638, AC004983, AC000003, AC005005, AC005632, A1099867, A1008719, AC002306, M87889, AC006512, A1035400, A1034553, AC004646, AC005768, AC002985, AF207550, A111168, AC004525, AC006455, AF111169, AP000348, AC005225, AP000349, A1023883, AC004587, AC005189, AC005696, A1096678, AC002350, AC004167, AC002064, AC003108, AC005027, A1023655, AC005569, U96409, A1109758, AC005207, AC005004, AC005071, A1022326, AC003007, A1031584, AP000330, AP000343, AP000555, A1022718, AC006050, Z94801, AC007057, A1049872, AC004817, AC002400, A1049569, A1009050, AC006017, AC005480, Z85987, AC009300, AC006315, A1121757, Z83820, A109610, AP001060, Z68285, AP003362, AC006948, A118497, A1022316, A1096791, A1034555, AC005952, AC007308, AC004030, AF053356, AC002470, AC006013, AP000354, AC007684, A1031685, AC002302, A9015355, AC006509, A1035448, AC006360, A1121653, A1035458, Z70280, AC004967, Z95115.

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HCFO46	437	927654	1 - 390	15 - 404	
HCUA60	438	670941	1 - 54	15 - 68	AL749002.
HCUA58	439	738408	1 - 302	15 - 316	AW134410, and AL042629.
HCUA70	440	959686	1 - 223	15 - 237	
HCUA89	441	706427	1 - 417	15 - 431	
HCUA92	442	504395	1 - 314	15 - 328	AA342610.
HCUAH15	443	916651	1 - 217	15 - 231	T78930.
HCUAH60	444	916621	1 - 218	15 - 232	AL249862, AA911187, W52505, AW118534, A1085242, H72530, AP000555, D86995, AC004787, Z68870, AL021154, AC004491, AC004142, AL109738, and AC004032.
HCUAH70	445	574164	1 - 280	15 - 294	R70107, R69934, AL031681, AC005387, and AC004821.
HCUAH71	446	959492	1 - 334	15 - 348	AL049830, AC007280, and AC003982.
HCUAH23	447	676289	1 - 240	15 - 254	AL133485.
HCUAH49	448	574256	1 - 279	15 - 293	AA502860, AA593267, AA558227, AL446638, F35659, T58118, AL137954, AL0963095, H73081, AW028429, AW148792, AL042756, AA448795, AL141675, AL121572, AW438916, AA487884, AL358501, AA579249, AL099094, AW069807, AW059991, AW193609, N27353, AW029280, AL1884487, AL676218, AW130535, A915068, T91187, R80865, AT761471, AL1926681, AL1860677, AL248679, AL680243, AL625570, AL039451, T65812, N66945, AL625468, AL383838, AA977743, AA629939, AL176892, AL125139, T08074, AA664535, R35972, AL048925, AL928866, AL037574, AA828662, AA339432, Z70688, AC003009, AC006252, AL080243, Z69630, AC005944, AC004167, AC005516, AC004141, AP000065, AC007766, Z84718, AP000351, AL049745, AC004253, AC003665, AC005195, AC005668, AL031584, AC005666, S43650,

HCUAL07	449	953876	1-442	15-456	AD91283, AI091391, AI143678, AW152653, B92931, AW243238, AI863952, AI263430, AI308855, AA814965, AF079098, and AF079099.
HCUAM57	450	574375	1-313	15-327	T91791, AW071109, AU087055, AA338281, AA251575, AA525157, AA973913, AI348567, AI370548, AC004000, AI121769, AI049759, AI021940, AC008115, AC003108, AC008119, AC005288, AC005037, U96629, AC009464, AC007676, AC002349, AI079342, AI050317, U95739, AC007308, AC003101, AC007263, AI034549, AI136504, AC003962, AC005899, AF130343, AI122020, D87675, AI034429, AC004616, AP000141, AC003037, AC005067, AC004890, AC002992, AC007253, AC002302, AC007240, Z82203, AC004685, AC004491, AC004953, AC005391, AC004132, AC015853, and AC006211.
HCUAM95	451	727174	1-243	15-257	AA613766, Z822901, and AI136520.
HCUAN44	452	574154	1-499	15-513	AA985143, AI113245, AC009239, AP000500, Z97183, and AI020997.
HCUAN49	453	577897	1-163	15-177	AA651923, AA765019, AI668900, AA968447, and AC004968.
HCUAN72	454	850140	1-191	15-205	AI049709.
HCUA003	455	924902	1-311	15-325	AA59705, AI886736, AA765409, AC005011, AF196971, AC006530, AC005520, AC006236, and AB020875.
HCUA028	456	850062	1-334	15-348	T94088.
HCUA092	457	506688	1-279	15-293	
HCUAR07	458	953872	1-147	15-161	AW167136.
HCUAR07	459	953869	1-484	15-498	AI042660, AA633908, AI791151, AW393562, and AI021396.
HCUAL02	460	920694	1-140	15-154	
HCUAU16	461	574193	1-294	15-308	
HCUAAX57	462	934633	1-294	15-308	AD243475, AW183326, H22954, and F04138.
HCUBB28	463	685493	1-225	15-239	AA569686.
HCUBB46	464	577238	1-327	15-341	

HCUB26	465	810522	1 - 99	15 - 113	AA381762, M78032, AA381747, AW339422, AA470400, AI198718, AI1590404, A W404225, AI045108, H62530, AA297207, H54511, N41775, AI915081, F35684, AW440368, AW247389, R69819, AA856866, AA501807, AE306717, AI309943, AW440568, N67313, AA565911, AA678932, AW081610, AI538236, AI824476, T94988, T74524, N84161, AA714073, AA665532, HI2857, AI823705, AI925065, AI025930, C06004, AW088631, N68449, AW238233, AI889995, AI271762, AA745351, AA513851, AA678616, AW078821, AI962030, AA1018923, AI0412829, AW088656, AI653776, AI126814, T07225, AW019964, AA749152, AA496309, AI044223, AW338860, AA581498, AI620992, AA68494, AA552386, AW390284, AA630122, AI474665, AA846923, AI457389, AI568659, AW701131, AI417386, T40629, AA297662, H01852, AA846923, AI457389, AI568659, AW701131, AI417386, T40629, AA297662, H01852, AW082104, R93919, AI041924, AW080118, AI648514, AW084173, AI72736, T52822, AA579399, H40478, AI561241, AW021007, AW086291, AA309362, AI806535, AA584756, AA331158, AI053934, AA601653, H07953, AA744048, AI955360, AA745383, AI120976, P08866, AI053597, AI889579, H25938, AW328446, AI277373, AI278440, N70449, AA599080, T54144, AA368359, AI598056, AA862312, N54538, AI445557, AA179659, AI041240, AW265688, C06210, T40799, AI445338, AW263279, AA878492, AA434078, M77908, CI5504, AI278972, AI446336, AA189097, AI049630, AA586433, AI079809, AA218631, AW242031, AW408767, T92394, AA3339923, AA744094, AA654038, AP000065, AI049576, AC004655, AI034418, AC002429, AC005037, AI109984, AI031848, AC002288, AC007055, Z99716, AI049776, Z93017, AC004882, U62293, AC006449, Z84480, AC006539, AI096701, AC005562, AC006238, AC005057, AI031311, AC006211, AC004000, AC002302, AC009516, AI031680, AP000252, AF111168, AI135744, AP000689, AC005884, AC007676, AC007993, AC004966, AC004644, AP000555, AP000131, AP000209, Z83820, U91321, AP000212, AP000134, AC005871, AI109628, AC005519, AP000208, AP000130, AP000248, AC007227, AC005488, AI049757, AC006101, AP000247, AI139054, AC006578, AC007878, Z69733, AC005261, AI022721, U91323, AC004531, AC004098, Z85986, AC005225, AB003151, AC005726, AP001532, AC003013, Z83826, AC004628, AI035249, AI121638, AC006480, AC005253, AC004491, AC006121, AI031597, AI031846, AC005071, AI031767, AP000213, AC000025, AI022165, AF146367, AC004938, AI049712, AI022323, AI133485, AI049569, AC006065, AC004855, AC007376, AC005015, AC004448, Z84469, U78027, AP000135, AI109952, AI031282, L35533, AC000552, AC004031, AC004662, AI035409, Z97630, AC005520, AC005399, AC004876, AI096791, AC006381, AP000557, AC006285, AI121635, AI003147, AI080243, AC002425, AC005800, AI049653, AC005060, AC004895, AC006425, AC006160, AC005081, AC004125, AC004859, AC002375, AC004520, AF111167, AI031291, AC008115, AC005180, AC005730, AC006515, AI024498, Z84487, AI035422, AF124523, AC004887, D83253, Z93241, AP000031, U95740, AC004409, AP000356, AC005332, AC000333, AP000556, AI049795, AF109907, AC004878, AI133448, U78810, AC003665, AI031657,
HCUB27	466	574097	1 - 407	15 - 421	

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HCUBE55	467	574203	1 - 376	15 - 390	
HCUBG79	468	781681	1 - 177	15 - 191	
HCUBG83	469	537501	1 - 206	15 - 220	
HCUBH45	470	575720	1 - 121	15 - 135	
HCUBI13	471	862161	1 - 375	15 - 389	H93071, H50664, AW086257, A1754336, AG634786, AW021583, A1939442, AL138396, AW008317, T91187, T40617, AL307201, A1192631, AL804138, U91321, U52112, Z29373, AC005229, AP000337, AB012286, AL109801, AC004966, AC005089, AC004638, AC006449, AC006049, AP000215, AC002553, AC006382, AB023049, AP000961, AC009069, AL031577, AL035703, AC006312, AC007057, U76377, AC004485, AC006253, AP000513, AC009743, AC012599, AL022238, AC005081, AL049539, AF095725, AC005231, Z68870, AL021394, AC003012, AC004864, AL049557, AC004099, AC006237, AC007151, Z82194, AL229042, AC004841, AL049776, AL031427, AC004520, AL035494, U80017, AC006441, AC005274, AC004913, AL033518, AC005695, AP000079, AC005049, AL117340, AC005067, AL023575, AC004770, AL023807, AC005145, AL122126, Z94277, AC004974, AC005335, AL031681, AC007537, AC004887, AC005790, AL049576, AC000353, Z94721, AC008928, AC011604, AL080243, AL031665, AB000658, AC005324, AC005519, AC005069, U85195, AC004257, AC005799, AC004820, AL031447, AP000354, AC005827, L44140, AC005780, AC005971, AP000959, AL132987, AC005255, AL079295, AC004253, X87344, AC004890, AC000069, AL049777, AL035683, and AL023576.
HCUBI14	472	574199	1 - 99	15 - 113	
HCUBI15	473	881192	1 - 338	15 - 352	
HCUBI38	474	792415	1 - 533	15 - 547	
HCUBI43	475	685512	1 - 115	15 - 129	AL246003, and AL121638.
HCUBI49	476	961748	1 - 144	15 - 158	
HCUBI74	477	574235	1 - 388	15 - 402	



HCUBJ11	478	967484	1 - 314	15 - 328	D61636.
HCUBJ42	479	574265	1 - 312	15 - 326	
HCUBK01	480	917257	1 - 409	15 - 423	<p>AZ79417, AA558404, T05617, AI049955, AI568659, AI284536, AI251563, AA491423, AA610255, AI792695, AW302832, AI024511, AI792856, AL040816, AA629759, AA078384, AA635433, AW271095, AA381990, AL135377, AI948984, AI733946, AL039042, AL039041, AA775205, AI948959, AI733930, AA652910, H45698, AA838192, AA101744, AI792842, AI281622, AI043878, AI252190, T52745, AA557911, AA743968, AI815583, AW407632, AI732807, AI252141, AW328202, AI816537, AI280574, AL121287, AW337805, AI358712, AW275432, F01666, AI792746, AA874999, AI753672, AA642823, AW265155, AI048479, AA326452, AA324088, AI282629, AI798313, AL042373, AI245693, AI129421, AA326630, AA582746, AA683069, AW151018, AL118925, AA564925, AA303770, V24312, AI038977, AA460924, AI049845, AA772873, AI798041, AA579399, AI114657, AA536040, AI249365, AI096791, AC007025, Z82244, AC006312, AL049699, AC004185, Z97634, AC006026, AC005737, AC009247, AC007639, U80930, AC005670, AF157623, AL034402, Z98743, AC005725, AC005365, AC004668, AF006752, AC005338, AC004096, AC007385, AC005952, AC005072, AF024534, AC004031, AL050318, AC004254, AC005081, AL080317, Z97832, AL035495, AC005751, AC008123, AC002316, AC005086, AC004099, AC006012, AC004799, AP000109, AP000041, AL034549, AC000039, I47234, AL022238, AC007385, AC005952, AC006441, AL050332, AL049650, AL135744, Z83838, Z83826, AC006965, AC011331, AP000008, X62358, AL023807, AC002295, Z98747, AC002366, AF051976, AC004694, AC007773, AP000153, AP000704, M89651, AC000082, AC005300, AL031737, AL008712, Z97053, AL139034, AL031904, AC009294, AC008044, AC005587, Z99496, AC004531, AC007130, AC005661, AC003037, AL024498, AL023879, AC004778, AC007566, L81612, AC005037, D84394, AL022311, AF091512, AL132987, AC004663, AC006047, AL008582, Z83843, AC005736, AC005164, AL096803, AC000088, AC005088, Z99570, AL109628, AC000394, AP000509, AL008718, AC006236, AC000071, Z95118, AC004656, AF001552, AC005546, AC005695, Z84484, Z99716, AP000504, AL022326, AC004961, AC004686, AL080250, AP000347, J0083147, Z95115, AC004013, AC006693, AJ010770, AL121754, AC004881, AC009363, Y12853, AC004097, AC005005, AC004922, AL049758, AC002544, AC005609, AC005666, AF130342, AC005753, AL117355, AC007565, AC005519, AL034420, AL049776, AC002545, AC005015, AC004921, AF129756, AC005632, AD000864, AC004851, AC005099, AC004750, AP000288, AC005280, AC005487, AL021578, AL031735, AC003353, AL049631, AL022717, AC003107, AC006597, Z82194, AL079304, AC009784, AC007201, U73643, AL031003, AL031387, AC003682, AL035461, AC007625, AC007899, AL024509, AC005041, AC007536, AL035462, AC005681, AL035460, AL021398, Z49208, AC005003, AC003012, U52111, AC020663, AC006946, AC005484, AC004583, AL109963, Z83844, AL031447, AP001550, AI229043, AL009179, AI109798, AP000501, AL096757, AL078638,</p>

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HCBK36	481	850132	1-492	15-506	AL200051, AA714595, AW086257, AW406755, AA317170, AA610438, AA342256, AL118947, F32705, AW408063, AW069807, AL358229, AL345518, AA526193, AL037291, AA663306, AL281881, AA557879, AA652057, AA649642, AA569468, T40617, AL690994, AA503168, AI963095, AL118911, AI049634, AA670126, AA743972, AA095511, T63597, N27353, AW088058, AA125788, AW263393, AW196798, AW023389, AW028429, AL050670, AW406447, AL281903, AL037945, AI061296, AL355206, AL041368, H58472, W07032, AW406659, AL138242, W07122, AL134703, F29989, AI365988, AL133862, AI865804, AA491814, AA747889, AW339687, AA516225, AL038990, AL635272, AA932099, AW302909, AW008317, AA228420, T59509, H86301, AI446474, AL042420, AA318652, AI912322, AW407340, H86264, AL708009, AL119123, AI352078, AA720746, AW316969, AI796627, AW439558, AL048925, AA640979, AL036523, AI633007, AA838479, AL679713, AL801482, AA947370, AA449854, AA838477, AA121919, AA878495, AA658235, AA804993, R44592, Z97198, AP000503, AF134726, AC005067, AP000275, AC004614, AP000037, AP000105, Z94721, Z84814, AC007130, AC007690, Z32772, AL008721, AC020663, AL031662, AC000086, AP000701, AL022098, AC004841, AB020869, AP000017, AC005365, AC006001, L78810, AC007051, AC007919, AC000070, Z93016, AP000884, AC005754, AC004477, AP000962, AC002045, AC005593, AC007395, AL096766, AC002349, AC004887, AC004891, U91325, AC004534, AL132712, AB003151, AP000688, AC004760, AP000159, AP000018, AC006111, AC004799, AC004820, AL031587, AL035450, AL096701, AC007240, AL080317, AC004991, AC005081, AC004814, AC007024, Z73358, U91319, AC003009, AC003005, AL035535, AL109758, AC006064, AC005329, AC005887, AL034402, AC005880, Z95152, AC002365, AC010175, AC005829, AC007970, U75638, AC004996, AC005164, AC005701, AL021395, AL078639, AC005376, AL022158, AP000349, AL109759, AF045555, U75645, AC002072, Z86090, AL035604, AC005940, AL031769, AL049759, AF043105, AL049539, AC008372, AC008122, AC007001, AC004061, AP000557, Z98048, AC007444, AC004263, AC004755, U11309, AC006600, AL023802, Z74617, AC000125, AC007536, AC004650, AC005699, AC003688, AF129756, AP000517, AP000692, AL031132, AL021154, AC003963, AC006254, AL023801, AF067846, AC007695, AL096774, AC004008, AL049633, AC012380, AL035420, AL031291, AC007535, AL022329, AC006532, AL008731, AC005019, AF027550, AC004896, AL022337, AC006275, Z98749, AP000350, AF001549, AC004881, Z85986.
HCBK39	482	577234	1-491	15-505	
HCBK46	483	574120	1-368	15-382	
HCBK49	484	574122	1-365	15-379	

AL022323, AB001523, AC005520, AL078581, AC004675, AL003147, AB023054, AC004186, AC007245, Z83826, U81136, AC003101, AL031447, AL009181, AC005666, AC005345, AL135783, AL049636, Z98051, AF088219, Z93241, AL034419, AC005778, AC005777, AL022578, AC007237, AC005264, AB011147, AL023284, AC009516, AC005280, AC004408, AC004232, AC002117, AL133382, AL049635, Z86061, Z97181, AC005751, AC007387, AL109613, AL031257, AF095725, AC005003, AC004913, Z93783, AC007243, AL035587, AC004797, AL021307, AC004188, AC007327, AC000387, Z99291, AC005157, AC009721, AC006039, AL049780, AC005274, AC007993, Z97352, AL034420, AJ005683, AC005064, AC004081, AL023582, AL117352, Z93020, AC009501, AC005411, AB014086, U78308, D86998, Z69719, AC004467, AC008928, AL049591, AC002464, AC005783, AC004963, AL035410, Z68344, AC006079, AC004973, AC004222, and AL109827.					
HCUBL12	485	739021	1 - 198	15 - 212	
HCUBL65	486	574201	1 - 297	15 - 311	
HCUBM86	487	577291	1 - 332	15 - 346	AL117328.
HCUBN07	488	953879	1 - 179	15 - 193	AA662395.
HCUBN21	489	577287	1 - 331	15 - 345	
HCUBN38	490	971421	1 - 172	15 - 186	AW089099, and AC004227.
HCUBN66	491	664536	1 - 135	15 - 149	
HCUBO08	492	959928	1 - 305	15 - 319	AC006388.
HCUBP09	493	526757	1 - 133	15 - 147	AL031683.
HCUBP89	494	850016	1 - 347	15 - 361	
HCUBQ76	495	575352	1 - 269	15 - 283	AL061235.
HCUBQ85	496	967074	1 - 327	15 - 341	AW328178, AW228000, AA501777, AA503770, AA749428, AC004854, AC005536, AP000547, and AC004621.
HCUBS58	497	522378	1 - 295	15 - 309	AA342137, F19690, AA069872, T78945, AA347735, R68248, AI453160, AI564294, AA632765, AI471467, AA181917, W01359, AC004983, AC007225, D87675, AC004851, AP000090, AF196969, AC004967, Z98941, AL031003, AF222685, AC005233, AC002126, AC006241, AC007382, AF130248, AC007193, AL035086, U07563, AC004778, AC000070, AL096702, AP075007, AC005529, AL080286, AP000689, AP000688, AC000025, Z83846, AP000354, AB003151, AL109738, AL034554, Z97053, L44140, AP001052, AC002477, AC005962, AC004168, AL117337, AL021155, AC005226, AL031681, AL031255, U91321, AL133163, AC004228, and AL035460.
HCUBS72	498	577286	1 - 431	15 - 445	AI355281, AI978712, AA664521, AI076616, F31799, F37223, AA310117, AA077302, AW166611, AW131457, AL038936, F31465, AA133650, AI357823, AA648858, AA658846, AW408161, AI926366, AA482896, AL048544, AA133651, AW380074, AL0799466, H21449, AI752978, H42075, AA482768, AI139971, C05928, AI860423, AL119295, AI701959, AW167372,

					N27353, AA670108, AA338522, AA342901, AA576336, AA736963, AA347109, AA569206, AL037285, AI186233, AA354785, AI783494, AA342256, AP000555, AC013853, AF205588, AC004999, AL034423, AC003075, AC005031, AC005387, AC002036, Z99496, U80017, AC016027, AC016830, AC005920, AF134726, AC008984, AL078581, AL021085, AC005253, AC005519, Z98051, AC005385, AC004895, AC005828, AC003002, AC006139, AL121652, AL035400, AP000503, AC006544, AC006101, AL121578, AF140764, AC000041, AC004016, AC000025, AL021917, AL035397, AC004686, AB026898, Z85986, AP000350, AP000514, AC002316, AL031295, AC006121, AC007533, AC006372, AC004655, AC007387, AL021453, AL109967, AL133304, AC007637, AC006430, AC001066, L81893, AL078472, AC007096, AC006077, Z83826, AC005011, AL049829, AC007151, AP000245, AC016831, AC004254, AC005237, Z99570, AL031662, AC004132, AL035587, AC005488, AC007666, AC007285, AC002037, AC003973, AC007707, AL008730, AC005200, AL022328, AC007050, AL009174, AP000704, AC002059, AC006992, AC007313, AC005081, AC007023, AC000105, I59642, AF106918, AC004779, AC005346, AC004791, AP000255, AL035424, AP000129, AP000207, AP000213, AC004996, AP000135, Z98044, AL009179, AL035684, AP000031, AL121877, AC004019, AC007721, AC005772, AC005057, AC004970, AC006285, AL021579, AL022329, AL023656, AC005839, AC005362, AC004383, AC003665, AC006432, Z93017, Z94161, AC006255, AC007455, AC004595, AL021578, AL133163, AC000353, U52111, AC007688, AC005280, U95742, AL023279, AC005954, AC005520, AC005018, AL031864, AC007216, AC007685, AC007245, K03555, AP000008, AB000882, AL031311, AC002045, AP000962, AC004933, AC009399, and AL008719.
HCUBT02	499	920682	1 - 306	15 - 320	AI188587, AA705559, H47182, H47091, and AF147424.
HCUBT94	500	574239	1 - 528	15 - 542	
HCUBV04	501	615547	1 - 372	15 - 386	AW026750, AA579906, and AL035090.
HCUBX57	502	506518	1 - 346	15 - 360	AW084004, AA364082, AA351808, AW089950, AA533660, AC005920, AF196969, AC005031, AC000025, Z83844, AC008101, AF047825, U80017, AC005520, AC004805, AC004851, AC006276, AL022238, AL050140, AC005695, AC005971, AL049869, AC006651, AC005214, Z75891, Z82180, AC005231, AL049780, AB029020, AF196779, AL139054, AC004263, AC005696, AC002319, AC007421, AC004796, AF053356, U95742, AF117829, AC005088, AC002477, AL050350, AC005015, AC005702, Z95114, AL117337, AC005409, AC004084, AC007216, AF001548, AC006443, AC004797, H4294, AL133448, AC004910, AC035461, AL034423, AL121825, AC002350, AL133245, Z94160, AC005519, AP000514, AC002301, AC002316, AC006139, AC005011, AC002430, AC003950, and AC004381.
HCUBZ57	503	529702	1 - 329	15 - 343	
HCUBZ86	504	694720	1 - 247	15 - 261	
HCUBZ88	505	574096	1 - 297	15 - 311	AI341867, and AA608765.
HCUBZ96	506	506585	1 - 293	15 - 307	

HCUCB20	507	574189	1 - 415	15 - 429	AL031295, AC002316, and AC005696.
HCUC20	508	573901	1 - 347	15 - 361	AA986600, AA515224, A1828479, FI3749, A1870444, AA747472, AW167909, AW438643, W21218, AW090629, A1962050, AW023975, A1135643, AA659083, AW19262, A1751162, W162288, A1917271, A1307201, A1431303, A1688846, A1284640, A471481, AA657741, AW029038, A1696793, A1345654, F36273, AW166815, AW193265, AA527954, A1530211, A1041854, A1904894, A138421, AW193432, AW18421, A1653886, AC004821, S77605, AC006312, AL008715, AF165926, AC006960, AC005412, AL008635, AC004491, AC002449, AC009225, AL031670, AC008009, AC004985, AC005874, AF134477, AC004382, AC004675, AF088219, AC004797, AC005220, AL109801, AC003681, AF205588, AC020663, AC006111, AL035587, AC006992, AC007676, AL034376, AC005696, AC005695, AL035086, AF003626, AL022313, AL121655, AP000347, AL035460, AC009248, AC003110, AL035413, Z82097, AL031584, AC004972, U02292, AP000346, U82671, AL096791, A1251973, AC005034, AC004685, AC007878, AC007292, AC004690, AC005821, Z93930, AC004834, AP000240, AC004263, U52112, AF196971, AC005594, AL022322, AC006543, AC005776, U63721, AC006241, AL136295, Z97054, AC004098, Z82244, AC004991, AC004084, AF190465, AC003553, AC004103, AE000662, AP000553, Z83844, AC004837, Z84477, AC003047, AC007277, AC006101, AC006571, M94081, AL008729, AL033527, AC006544, AF045555, AC002369, AC005255, AC002301, AP000289, AL080276, AL096677, AL021391, AP000501, AC005041, AC005482, AC006552, AP000042, AP000504, AP000110, AC006511, AC007666, AC008984, AF155238, AC005037, Z97056, AR036572, U91328, AC002316, Z94160, AL121603, AL117351, AL079295, AL078471, AC004655, AC005048, AC005632, AC007536, AL049761, Z99570, AL008583, AL022237, AC007731, AF129756, AP000339, AP000518, AC005500, S42659, AC006480, AC007151, Z95113, AC002543, AC002470, AB026899, AP000217, AC006251, AC005702, Z70288, AC005514, AL132987, AC004678, AL022334, U00254, AC005664, AC002289, AC004841, AC005619, AC004126, AC008064, AC007993, AF037338, AC006538, Z97183, Z85986, AL035403, AC002326, AC005553, AL022476, AC005377, AL031387, Z99129, Z82245, AC007387, AC007051, AC007546, AC004500, AL109758, AL031681, AC005071, Z68273, U95742, AC007308, AP000355, Z81370, AC005015, AL009031, AC006547, L78833, AC004859, AL022323, AC007919, AC005003, M87923, AC005094, AL132712, AL031281, AC004883, Z69890, AL096701, AL049830, AC007216, AC003065, AC003007, Z84469, U89337, AC003688, AL034417, AC006057, U73634, AC004933, AL049869, AC004216, AC007055, AL031005, AC000075, AC005033, AL109613, U73168, AC005330, AL009181, AP000269, S70707, Z84466, AC002365, AL031735, AC004000, AC004760, AC004447, AP000500, AL020997, AL109963, AC006276, AC006064, AL034384, AL049540, and AF134726.
HCUCB28	509	577129	1 - 291	15 - 305	AL022318.
HCUC96	510	796530	1 - 229	15 - 243	AW003018.

HCUCD26	511	574098	1 - 226	15 - 240	AB020868
HCUCD82	512	780047	1 - 329	15 - 343	R22017, AC004787, and AF165926.
HCUCG21	513	671210	1 - 463	15 - 477	
HCUC143	514	715488	1 - 203	15 - 217	D60319, D60589, D60408, D61144, D60853, AF119569, AF091501, and AF087651.
HCUC190	515	967501	1 - 65	15 - 79	AC007032.
HCUC108	516	959910	1 - 531	15 - 545	
HCUC148	517	720905	1 - 245	15 - 259	
HCUCV13	518	574121	1 - 310	15 - 324	
HCUCV20	519	694398	1 - 250	15 - 264	
HCUDA38	520	862089	1 - 344	15 - 358	
HCUDB13	521	578712	1 - 323	15 - 337	AA936845, N73060, N73203, R14903, AA988600, AA595504, M78131, AA774006, W68328, H15294, A1049504, AA364863, AW131417, AA077619, AA477517, H53101, AA665304, AA457230, N57709, AL037006, R38509, H58786, A1791561, AA173334, AA525407, H10454, R48980, AA636102, A1479068, AA225548, AA321595, N22153, AW192518, R82835, AW073498, H09639, A1929410, A1753672, A1019964, A1750950, AA693806, AA629412, AA479337, A1273675, AA296938, C14599, A1268564, AA706094, AA831801, C14880, A1138918, AA741020, A1367222, AA832016, A1371804, A1860535, AW276933, H633220, AW103407, R83708, AC009399, AP000128, AP000206, AP000245, AC005529, AL008715, AL034420, AC000025, AC005527, AC009247, AC004531, AC002407, AP000688, AC011331, AC002590, AC004466, AL008718, AC004540, AL031803, AC002381, AC006077, AC005351, AC005901, AC005822, Y11107, AC000086, A1133275, AC004910, AC006042, AC007919, AC006417, AF006487, AC004383, Z99716, AF111168, AL035587, AC005972, AL031577, AC006275, AC002301, AC002351, Z97054, AC007055, AC007537, AC002120, AC005591, AL031428, AF027974, AC000353, AL034419, Z95331, U72845, AC004955, AL031255, AC005088, AC004587, AC002563, AL133448, Z85986, AC005209, AL109963, AC007263, AC005480, AC007540, AP000116, AC005231, AC006388, AC000066, AC004000, AC005049, AC004851, AL035415, AC002073, AF134726, AC009509, AC005585, AL021154, AL118516, AC007227, AC007201, AC005071, AL096775, AC005740, AC005921, AP000555, AC004983, AL121915, AL049766, AC004139, AL049830, AC007226, AC004908, Z98752, AC007536, AC007559, AC004036, AC005037, AC005578, AF092925, AC006059, AC005486, Z98941, AC007028, AL101070, AC003064, AL078581, AC008249, AC007214, AC002072, Z82178, AC005796, AL109952, AL009181, AC005971, AC010168, AL033527, AC004054, AL049699, AD000812, U91324, AP000252, AL024498, AC003962, AF141308, AC006649, AL034418, AC008044, AL021578, AC005722, Z84474, AC005521, AC005479, AL033524, U91318, AL031685, AC004694, AC007899, AC004125, AC005399, AL121825, Z74739, AC006344, AC005005, AL035422, AL132449, AC006071, AC004019, AC005821, AC000026, AC006538, AL050318, AC006365, AC004817, U95740, AP000212, AP000134, AL109984,

HCUDC45	522	576566	1 - 379	15 - 393	U63721, AC003036, U69639, AC005520, AP000692, AI049869, AC004904, AC003670, L78810, AI139054, AC009721, AC005082, AC004017, AC004797, AC004084, AC004491, L13712, U93305, Z68281, AC005778, D84394, AI133353, AC004678, AI049829, AC005600, AC007542, AC006226, and U85195.
HCUDC79	523	576577	1 - 154	15 - 168	AC007324, AC008079, AC008101, and AC016830.
HCUDDD19	524	959706	1 - 1796	15 - 1810	AI184562, AW248599, AW051528, AA447350, AI740715, AW316672, AW316654, AI952004, AA977191, AW363318, AA703205, AA149973, AI135413, AI1799559, AA459866, AI233370, AW264927, AW264916, N93625, AW297503, AI192819, W68805, AA402761, N53321, AI207204, AI809102, AA804623, AW057780, W68607, H80704, AA398493, H80394, H14357, AI581914, H51962, AI873736, AA300679, AI689515, T33180, H80494, AA55067, H14357, H68104, H68165, AI807729, AI693622, AI273514, AI932996, AI932990, H80705, N48174, R92093, AI342079, AA903178, AI037469, D61862, H81412, AA460510, W25416, R92092, T24613, AA280237, AI493508, N74148, AA281536, AI525850, C20784, AW438613, AA923003, AI094325, and AB002330.
HCUDDD43	525	850103	1 - 263	15 - 277	AI49874, T39598, AA581903, AA630352, AI890928, AW023511, AI890570, AI859251, AA484148, AW702023, AA309460, AI334435, AW074398, AI561335, AI110770, AA226364, AW193546, AA342901, AI120502, AI266576, AI536555, AA715270, AI679706, AI612152, AI679132, AI287651, AI079683, AI446464, T63104, AI252114, AA177061, AW270270, AI792903, AA916039, AW162489, AI734002, AI358343, AI148277, AI279165, AW074207, AW338086, AI061227, AA523688, AI120687, AA587256, H60143, AI064864, AI252085, AA451612, AI138265, AW303876, AA348311, N66776, W47480, N64437, R44592, AI792864, AI733957, AI119984, AI053672, AI471481, AA744110, AA441788, AI334443, AI040130, AA594215, AA553465, AA491814, AA481363, AA652057, AA481375, AA649642, AI742771, AA386111, AI246796, AI674873, AI287451, AI274431, AA501722, AI610159, AI048925, AW34892, F19156, F36273, AI830390, AI041382, AI284640, AA483034, AI613261, AI125788, AW327360, AI040547, AH93634, AW172727, AW265009, AI137954, AA515938, AA578141, F03097, H92005, W45336, F35113, AI107160, AI116691, AA559290, AI049831, AI049697, AB020871, AP000193, AI109881, AI023281, AC005565, AP000117, AC004983, AC004021, AC006126, AI031293, AC005274, AI023575, AC004019, AP000049, AC004475, AC005089, AP000311, AC004067, AC007065, AI080243, AC005158, AC005837, Z83826, AI070666, AI096701, AC005412, AI096829, AC006277, AC005086, AB020870, AC002564, AB020859, AC004941, AC004616, AI049869, AI049757, AC002287, AC005483, AP003343, AC005252, AC000095, AP000173, AC002429, Z81369, AC000052, AI031430, AC005104, AI035684, AC005184, AF072711, AI079295, L14752, AF111169, AP000023, Z98885, AC005037, AI035249, Z68871, AF000018, AP000160, AC004924, AC005199, AC009227, AC006482, AC005231, AC004813, AF047825, AI023807, AC006537, AC007934, AC005793,

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HCUD23 527 953868 1 - 356 15 - 370					
HCUD38 528 850076 1 - 324 15 - 338					
HCUD47 529 861150 1 - 789 15 - 803					
HCUDF26 530 676949 1 - 436 15 - 450					
HCUDF33 531 577224 1 - 295 15 - 309					



HCUDF90	532	958449	1 - 459	15 - 473	AA747777, H71827, AA378822, AA5778821, AA573020, AA810269, AA503154, AA451612, AA095511, AA837058, AA644538, AA533725, AA985455, H81785, T29180, T52733, AA593247, P00290, T53607, F31204, AA493708, R31948, T69435, AA176717, N2424, AA801959, AA804962, AA112778, AA780797, AW050498, AI446464, AA564264, AW406755, AA148489, AI365988, AA192695, AI954260, AI358229, AA535661, AA143516, AA559849, AA578349, AA357937, A W088984, AW339687, AA503473, AA908349, AI635272, AA401022, T51102, AI499938, T72601, AI305766, AI920877, AI624698, AA059154, AI133723, AI278997, AI744188, T55213, AA640034, F37286, AA657918, AI827234, AA494163, AA365694, AA805230, AA218645, AA911519, AI169194, HI2334, R77608, AA669840, AA371533, C19038, W38648, T66647, R81240, R64515, AA515128, AI064864, AW338086, H71429, R45369, AA098922, H53522, AA533450, F34795, AA121333, AA364429, AA176114, N54934, AC004605, AC004964, AC012599, AC003684, AC005696, AC007845, AC016025, AC005069, AF117829, AC005736, AB003151, AP006688, AC006277, AL078477, AP000689, AC004858, AF109907, AF069291, AR000118, AI229042, AC016027, AC007751, AC016830, AC020663, AL031577, AL135744, AI239322, Z86061, AC016026, AC004854, U96629, AC004675, AP000556, AP000557, AP000552, AI246003, AL031668, AF038458, AL133245, AC005740, AC006374, AL009174, AF131217, AP001549, AF088219, AC004216, AC005839, AL008582, AL023575, AL121658, AC002349, AL031905, AI132718, AF010317, AP000114, AP000046, AC005409, AC004019, AP000473, AF124523, Z68322, U95743, AL022726, AL121603, AC005031, U95742, AC018633, AC002133, AL020997, AC008372, AC005730, AC004765, AL035587, AI238481, AC007510, AC005412, AB020858, AC005191, AC005775, AC007324, AC006597, X69953, AC006001, AB023049, AC005373, AL117330, U80017, AC005399, AC004596, AC006251, AL034420, AP000432, AC007773, AL022394, AC006273, AC005242, AC003030, AP000356, AC005666, AC002316, U82696, AC000353, AC006958, AF165176, AF064863, AL034379, AC006130, AP000705, AC000379, AL023879, AC000052, AC001164, AC006285, U91326, AC005772, AC004184, AC006525, AB020867, AF064861, D15054, AC007050, AC005728, AC005280, AF139813, U73634, AC006465, AC006312, AL022323, AC004139, AL035089, AC004770, AC004186, AL109799, AC004228, AC002070, AC002312, AC007314, AL031770, AC003681, AC004859, AC002051, AC002310, AL080243, AL031283, AC004894, AC005231, AC007666, AL031255, AI011930, AL022320, AC007686, AC008018, AR036572, U91328, AL031281, D14034, AC005837, AC008033, AC006948, AL021808, AC002544, AL049760, AL032821, Z84466, AC005841, AL109654, AL049757, AC004492, AC006441, AC005067, U07562, AC006208, AC009516, U63312, AL049776, AL049832, AL133448, AF002993, D87675, U47924, Z83840, Z98950, AP000502, AC005379, AL035668, AC006430, AJ003147, AL022328, AC004975, AC006121, Z84477, AC002589, AC004531, AC007099, Z83820, AL031670, AL035460, Z83844, AC004470, AC005082, AC005261, AC004671, Z85986, AC005913, AC007227, AL033527, AL078603, AC002066, AC005906, AL035540, AP000352, AC003682,
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	717894	533	1 - 392		
	713524	534	1 - 367		
	713524	535	1 - 303		
	915821	536	1 - 353		
	462283	537	1 - 376		

HCUDM66	538	506522	1 - 367	15 - 381	AC003964, Z83827, AL034548, AL031680, AC009223, AL132992, AB017652, Z97053, AL033392, Z96966, Z84479, AC005781, AC004645, AL109801, AC003002, AC007038, Z98744, AC005911, AL031390, Z801369, AP000477, AL035400, AL079295, AC020663, AC007551, AL133371, AC007650, AC006111, AC005390, AF095901, AC005923, AC004946, AC005002, AL031295, AF064865, AC005046, AC004222, U52111, AC006953, AL133353, AC006125, AC004789, AL080242, AF045555, AC005057, AC002119, AC005064, AL031848, AL132708, AC009247, AL021918, AL021368, AL109758, AC004010, AC004859, L13709, L13706, L13707, Z99495, AC007917, U18391, U57009, AF140763, Z98883, AC002306, AC004755, AC004403, AC000127, AC005355, AL034418, AF038458, AC000066, AB020859, AC005231, AC006409, AL031657, AC004990, AC005150, AC007011, AJ010770, AC005274, Z77894, Z77894, AF196779, AL121823, AC006006, AC005552, U67230, AC006124, AL096761, AL023799, AB020871, AL0022143, AF000855, AC005243, Z98304, AC003037, AC005527, AF042090, Z97054, AC002055, AC004967, AB029343, AB023039, AC004195, AC004076, AL031223, L47234, Z84718, AC005210, AF091512, AL078462, AJ239318, AC004745, AP000509, AL096862, AC006539, AL031666, AC007030, AP000351, AC004662, AL121825, AL049709, AC004027, AL035653, AC002980, AC004051, AC009181, AC006374, AC005822, AC005245, AF196779, AL121823, AF165124, AL031054, AC007364, Z95114, AL080239, and AC005084.
HCUDN09	539	850101	1 - 456	15 - 470	AI090115, AI168683, H99504, AI147670, AA232645, N73285, AA374707, AA380875, AW139567, AA886361, AI735132, and AI679526.
HCUDN14	540	862119	1 - 400	15 - 414	AL021368.
HCUDP19	541	578721	1 - 345	15 - 359	AC005755, AC005372, AL049780, and AC005081.
HCUDP23	542	783051	1 - 444	15 - 458	AA278441, AJ263438, AI870837, AI886871, AW450567, M78087, AA887815, AI700532, W94450, R96854, and P98160.
HCUDP27	543	725155	1 - 427	15 - 441	AI538514.
HCUDP82	544	578720	1 - 337	15 - 351	AI970020.
HCUDQ61	545	839959	1 - 318	15 - 332	U77321, L90095, AC002403, and AI006345.
HCUDS61	546	578705	1 - 390	15 - 404	AW057640, AA410949, and AI394291.
HCUDT62	547	747131	1 - 320	15 - 334	AF039235, AI669256, AW245958, AF763048, AW245514, AW237088, AI093187, AI571378, AW296090, AI354976, IG680102, AW119180, AI140327, AA934553, AI201269, AA559846, AP991982, AA625161, AL203368, AA040597, AW268813, AW152391, AI243335, AI185996, AA315994, D80898, AI887841, AI902903, AA497000, AI312767, AA373939, AA358918, AA634307, U25751, AI916936, AF700879, AA918570, AA362530, AI671153, AI927665, AI738973, AW087508, AI824923, AI810550, AA359868, AW196382, AI867799, AI738423, D80899, AA954586, C01220, AA489585, F31194, AA361102, AI698559, D20015, W81431, AA928147, AI432152, T27188, AA040679, T19862, and T27189.
HCUDT65	548	915742	1 - 1845	15 - 1859	

HCUDW37	549	859268	1 - 895	15 - 909	
HCUDW74	550	576240	1 - 246	15 - 260	Z84480, and AC005011.
HCUDX05	551	951165	1 - 37	15 - 51	
HCUDX14	552	571370	1 - 307	15 - 321	AC002477.
HCUDZ25	553	678365	1 - 295	15 - 309	
HCUEA58	554	790029	1 - 303	15 - 317	AL031729.
HCUEA63	555	745183	1 - 354	15 - 368	<p> AIR26761, AI355007, AI085719, AW338042, AI149478, AI650365, AI733856, AI742168,  AA455483, AA297666, AA226153, AA481887, AI310343, AA410788, AI135108, AI216151,  AW316969, AA744018, AI061313, AW156980, AW270771, AI829331, AI045027, AA555229,  AA651632, AI053978, AI037910, AI620415, AA679625, AA228778, AA021429, AI4737309,  AA503468, AI244127, AC003037, AI049776, AC005399, AI022316, AC007388, AC005015,  AC005529, AC005274, AC004067, AI132777, U63731, L78833, AC007308,  AI050318, AI021154, AI022323, Z82206, AI031767, AI031589, AC005280, AP00210,  AP00132, AC005231, AC006312, AC016027, AC016830, Z93017, AC005081, AI049869,  AFI11168, AC000159, AC005409, AC005913, AC007011, AC004755, AC004156, AC002310,  AC005291, U62292, AI109628, AC008498, AI035417, AF196779, AC005340, AC009247,  AI021808, AC005953, AC005043, AP000557, AC003043, AI133448, AI049692, AC003101,  AD001502, AC004491, AI022318, AC005074, AI049539, AI096703, AC005971, Z98742,  AP000098, AC006211, Z97056, AI021707, AC002302, AC007227, AC003007, AC005519,  AC005722, AP000114, AC005821, AC004686, AC020663, AI117352, AP000502, AI109952,  AC005800, AC004890, AC005881, AC007536, AC005632, AC005209, AI078477, Z93244,  AI020995, U91323, AC005330, AI035420, AC003665, AC004000, U91326, AC004983,  AC005412, AC004383, AC002544, AC005940, AI022476, AF134726, AC002375, AC009509,  AI121652, AI096791, AI031846, AI035400, AP000556, AC004876, AC009516, AC005200,  US2112, AP000514, AI049843, AI035587, AI121748, AC010170, AC004805, Z99128,  AC004738, Z84469, AP000356, AC002316, AC009044, AC006023, AC007637, AC004526,  AC007371, AC005943, Z83840, AF001549, Z85987, AC005921, AC004910, AC005484, Z85986,  AC007999, AI008719, AP000553, AC006077, Z95152, AC004832, AC003663, AC002470,  AC005089, AC002404, AC006121, AC007114, AC005261, AC004913, AC007664, AC005158,  AI035422, AC002425, Z93023, AC004841, AI031657, AP000510, Z83844, AI034548,  AF124523, AI133245, AI022165, AI049830, AC010205, AC000029, AC006509, AC002045,  AI035419, AI031774, AC004785, AC002996, US2111, AC005740, AC009288, AC008018,  AI049832, AI031295, AC004638, AI133163, AC005962, AC006449, Z84480, AC002070,  AC004084, AC005069, AC004874, AC004771, U85195, U78027, AI096755, AI049829,  AC005837, AC005300, Z99716, AC005520, AI133246, AC005049, AI020993, Z82244,  AC006581, AI133244, AE000658, Z83820, AC004815, AC004099, AI109984, AC002550,  AC006511, AC006271, AC003982, Z97876, AC005523, AC004583, AC006253, AC005088. </p>

HCUEA72	556	713040	1 - 311	15 - 325	AC004896, AC005220, AC006960, AP000248, Z84466, AC004895, AC000353, AC005544, and AL031291. AW084919, H67179, T38440, AL708182, AL141130, AA386433, H52397, AL865087, R56848, AF566425, AW270183, AA721523, AA721530, AP962094, H61871, AA610433, AC0292003, T89901, AA746911, AA374797, AW419389, H61942, AL697242, AV407340, W02189, AA069631, AA568314, AA809635, AA224917, AL697239, R69037, AL266359, AT749335, H71678, AL066711, AA666046, AL686470, H73306, T97896, H07953, AL583468, AL538214, AA071151, AL079666, AL697235, AA214042, AW074613, AA084076, AA468486, N70449, H13612, H01327, AA329565, AA032001, AA715955, AA525253, AA706495, T55992, AA601216, AA054085, AW152178, T81513, AL133749, H81267, AL858889, AP215176, W37651, AA747234, AA572784, AA513884, AL062232, AL583466, N52410, AA613754, AA249239, AC004859, AC005335, AC005332, AL096701, AL022069, AC006064, AL096773, AC004686, AC005291, AF001550, AC005005, AL121603, AC007773, AC004999, AC007637, AL109758, AC002544, AL021391, AC016027, AL133500, AC016830, AC006241, AC005102, AL031284, AC000052, AC005971, AC004216, AL049709, AC004000, AC005747, AC005375, AC008372, AC002477, AB023048, AC003664, AC004448, AL117338, U91323, AL020997, AL133163, L78810, AC008012, AC006130, Z86090, AC005280, AL035398, AL049653, AF196969, AC004253, AC005736, AC005919, AF019413, AL024508, AC006441, AL008720, AC002059, AC009399, AL023807, Z84487, AC005015, AF111168, AC006509, AC006121, Z95152, AC004801, AC004134, AL034420, Z83843, AC009247, AC001228, AL049775, AF190465, AC004832, AC007298, AF001548, AC004810, AC002312, AC007325, AC004791, AC004106, AL035683, AL021707, AL031683, AC004672, M63796, AC002476, AC004938, AC007312, AL050307, AL031659, AL022238, AL050341, AP238093, AL022322, AP000511, AF196972, AC005057, AC009464, AF217403, AC003687, AC000394, AL031657, AC004812, AP000032, AC006023, AC004019, AC005808, AL049636, AC002351, U07563, AL008707, AL079304, AC005288, AL031311, AL121658, AL031005, AL034429, AC003108, AF000089, AP000142, AL022316, AC007364, AC006539, AC004887, Z83826, AC002094, AC005049, AC000360, AL035400, AC002126, AC004526, AC004033, AL049766, AC005037, AC006302, AC00491, AD001527, Z99128, D87675, Z98304, AC006285, AC002996, Z84469, AF048729, AC003101, AL109627, AL049911, AL008719, AC006947, AC007308, Z93244, AC003025, AC006455, AC000134, AC004878, U62317, AC005180, AC004985, AF001549, AC006552, Z83844, AC006480, AF111169, AC008273, AF027550, Z83856, AF0050318, AC007763, AC006312, AL079342, AP009961, AC000120, AC005800, AC005089, AC007878, AC005229, AC004996, AC004223, AC003663, AC007201, AC006344, AL031228, AL133245, AF139813, AF205588, AC004821, Z97053, AC000240, AF047825, AC004655, U91326, U80460, AC005520, Z98752, AF11170, AC003982, AF030453, AC004510, Z96258, AC004222, AC005839, AP000502, AC005632, AF196779, AC003690, AC004386, AP000104, U95090, AC002306, AL096767,
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				AC006530, AL031774, D63507, AC004131, AC002302, AC007056, AF108083, AC004962, AF086394, AL031230, AL117337, AC005670, AL035413, AL031447, AF024533, AC002044, AC007566, AJ246003, Z84480, AC007934, AC006026, AC005071, AL031427, AC002565, AC009248, AL109657, AL121653, AL023575, AC005399, and AC003103.
HCUER62	557	579058	1 - 364	15 - 378
HCUER66	558	935769	1 - 94	15 - 108
HCUER78	559	850066	1 - 319	15 - 333
				H81012, H86221, AA018923, R64467, M87891, U14684, AL034429, AC004938, AC007376, AC004188, AC006480, U14701, AL022316, AC002477, AC005527, AC002416, Y14768, AC005620, AC005197, AC005907, AC000052, AL020993, AC002375, AC007055, AC006538, AP000505, AP000516, AC007707, U91629, AC004797, AC006263, AC005488, AC005914, Z82201, AC005529, AC005911, AC005410, AC007666, AC004019, AF111168, AF129756, AC005399, AC006449, AL139054, AL035387, AC005632, AP000512, AC005746, AC002310, Z74739, AC006511, AL023803, AC005067, AF001975, AC005753, AC004678, AL022237, AC002303, AL034420, AL021578, AL133448, AP001065, AL031311, AF033356, AC003043, AP000065, AC005971, AP000354, AF045555, AC004859, AC002551, AL118497, AC005003, AF134726, AC000405, AF165926, AL035086, AC005841, AL133163, AL050321, AL035405, U12387, AC007686, AC008015, AC005722, Z95114, AB014087, AL049766, AL020997, AC001447, AF001549, AL096677, AC006211, AC005777, AC005288, AL050308, AP000555, AC005409, AC005088, AC002104, AC004491, Z97055, AC007011, AC006077, AC002470, AF111169, M87898, AC004686, AC000025, AL031985, AL034423, AC006441, AL121603, AC002492, AC004190, AC005037, Z98941, AC003663, AC004671, AP000503, AC004659, AC005682, AL008718, AF037338, AL031662, AC005619, Z81365, AL022326, L78833, AC006064, AC005954, Z97876, AC006130, and AC005486.
HCUED04	560	615410	1 - 324	15 - 338
HCUED66	561	576573	1 - 449	15 - 463
HCUED04	562	653118	1 - 290	15 - 304
HCUED29	563	578709	1 - 240	15 - 254
				Z94044, AC005480, AC006388, and AL022316.
				AA305339, AL121572, and AL022341.
				AW297855, AA932284, AI911033, AI540093, AW105017, AA829228, AA814442, and AA768919.
HCUER41	564	578715	1 - 235	15 - 249
HCUER63	565	745184	1 - 100	15 - 114
HCUER66	566	578702	1 - 207	15 - 221
				AP000096, and AP000240.
				F37223, AW419118, F31799, AI446638, F23274, H64560, AI791610, AI867044, AW023672, AA381762, AA299115, AA548087, AI223616, AI287485, AW078552, AI053465, AI918421, AA399158, C06471, AI679713, H04867, AW130254, AA086236, AA469451, AW341903, AH39269, AI151261, N25303, AW129694, AI635274, AI679139, AI338426, AW302013, AI240891, AI152111, AI285696, M77950, AA913549, AW057776, AL044688, AA384489, AL138421, AI565873, AG09974, AA609841, T47280, N58729, AA229444, AA913114, AA302732, AI939465, AA527716, AW130535, N20066, AW085801, AI110688,

AA230143, A1469968, AW273469, AF53365, AA573540, N35896, A1888752, A1821044, AW192199, H47540, A1722239, A1267356, A1075744, AA629702, A1536625, A329321, H08791, A1821467, A1754023, W90237, R94721, A1124660, A1370270, H71349, AA528390, AA347835, AW085991, H86579, A1932884, A1207584, AA721577, A1570261, AA947837, AA018923, AA012829, AW368401, AA323085, R71981, AA720664, AW131213, A1811460, AA384039, A1539776, AA078483, A1267450, A1201668, A1979796, H96823, AW175641, AW192518, AC004935, A1096775, AC006571, A1022330, U80017, A1171694, U78308, AC004032, Z99128, AC0000070, AP0000080, AP049895, A1096774, AC005740, AC004582, AP000134, AF000212, AP000030, U40369, AP000356, AC006001, D87675, AC002451, AF007842, AF070717, A1009173, AC020663, AC002350, U76377, A10233539, A1035411, U02068, A1031005, AP000320, AC004617, AP000251, A1132712, AC005485, A1034430, A1096755, A1049874, AC004895, A1109985, Z72521, AC002369, AC006328, AC007681, AC005911, AC000003, Z94277, AC006561, A1022237, A1135744, AC004258, AC004773, AC006146, M87914, AC005291, AC007543, A1035681, AP000120, AP000167, AP000052, A1034417, AC005215, A1023577, AC005150, A1022395, AC007919, AC005007, AC007327, AP00502, AF064857, Z93241, AC005040, AC002524, AC006312, AC006062, U73168, AC007227, AP003553, A1022323, AC004383, AC004884, A1121877, AC004384, AC006120, Z98255, AF095725, AC000039, AC005771, AC005759, AC003102, AC007381, A1096707, AC002126, AC007565, AC007501, AC007632, AC002985, AP000142, A1171829, AP000113, U60274, AC007314, AC006538, AP000090, AF134726, Z83845, AC005516, U07000, Z98050, AC004841, Z95115, AC002565, A1020993, AC008125, AC002564, A1121653, AC003109, AF111168, AC005703, A1049712, AC006544, AC005695, D00591, AC002504, AC005264, AC005209, AC005102, AC005180, Z99943, AC004511, AC004024, A1022334, AC004003, A1035410, AC012599, Y14768, AC005993, AC004152, AC016025, AC007230, AC007050, AC005595, AC004813, A1003147, AC006251, AC005788, AC005200, AC005245, A1049576, A1031846, A1034402, A1022320, AC005280, A1049557, A1078639, AC006543, AC005875, AC007387, AC007695, AC002056, AC004462, AC008134, Z75888, AC005841, AF003627, AP000143, AF129756, Z83844, AC002525, AC005994, AC005046, AC005914, AC005251, AC007966, A1022318, A1035387, AC009946, Z86061, AC005696, Z80232, A1035659, U47924, AC003041, A1022578, AC004584, AC006013, AC002314, AC007557, A1035415, AC004517, AC005003, Z99497, AC004491, AC004453, AF123462, AP000031, AC004678, A1021453, AF053356, Z83826, AC004745, Z93942, AC006455, AC005829, AC000379, AC004650, A1031709, AC005670, A1022328, A1035450, Z75887, A1171354, AC005520, AC004230, Z68756, A1021808, AC006515, A1021368, A1031584, AC007207, A1117256, AC007666, AC004838, AC007845, A1021395, AC007308, AC007308, AC007129, AC002470, AP000966, AF079797, AC005328, AC005909, Z83851, AC008062, Y11873, A1109628, AC003688, AC005031, A1017652, Z93783, L77569, AC008273, AC007878, and			
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HCUEB83	567	578703	1 - 406	15 - 420	AC006948
					<p> AI801482, AA847499, AA493621, AI281697, AA649642, AI783494, AA502711, AI358501, AI613280, AI192631, AI138421, AA368936, AA846935, AW407578, AA713891, AW270635, AI282511, AI338350, AA491862, AI281881, AA573543, AW338086, AA467820, AW201583, AI360377, M86143, AA744018, AI537955, AP003462, AA526758, AW028403, AW406447, AW408047, AA469451, AI919265, AI824562, AA526536, AA658362, AI635458, AI281903, AA491650, AI613390, AW264934, AI457397, AI921296, AA507824, AI473475, AA468244, AA468505, AI610607, AH69172, AI570212, W38404, AW129694, AI133333, AI110770, AI093122, AI745325, AI133164, AA405493, AA526779, AG629874, AA523838, AI832016, AA743716, AA577959, AA516020, AI676218, AW130535, AW148792, AA492081, AA578481, AW084252, AI379719, AV044351, AW085740, AA134959, AI287528, AA483273, AI031281, AC006160, AC005324, X54180, X55931, AC004813, AC006241, LA7234, Z82079, AC003007, AI022313, AP000031, AI035587, AC002996, AC005730, AC004605, AC005763, AC000070, AI021937, AC005632, AI021939, AF123462, AL009179, AC010200, AL022329, AC006130, U07562, X54175, AC004755, AC005212, AC003965, AC006026, AI109984, AC004019, AF196970, AC004492, AC004858, AI031432, AP000349, AC004671, AC007845, AI133448, AC003108, AC004596, AF196779, Z92845, AP000514, AC007193, AI031428, AC006275, AD000092, AP000359, AC005696, AC005527, M87919, AC004686, AF109907, AC005175, AP000135, AC006139, AC005183, AC008079, Z81313, AC002045, AC005901, AC005088, AC006058, AC005837, AP000117, AC002368, U47924, AC000052, AF165175, AC007666, AP000326, AC006040, AC006487, Z97630, AI031255, AI035411, AI121748, AC004984, Z69890, AC004152, AC006449, AC005102, AC008044, AF010238, AC002119, AP000503, AF039401, AC005529, Z83844, AP000034, AP000169, AP000122, Z84476, AC002385, AI034418, AC005531, AC007617, AF079295, AC003029, AC005988, Z93244, AC006001, AC004263, Z98051, AC002470, AI121778, Z98044, AC006205, AC004881, AC004156, AF165141, AC007919, AF088219, AF001549, AC002984, AC006251, AC003070, AC003665, AC002476, AC007324, AL049759, AC007766, AC003098, AC005410, AL049795, AP000244, AC002395, AC004827, AC005089, AC007055, AC004815, AB023049, AF111167, AI1008635, AC004765, AC005839, AC007066, AC005237, AC004186, AI035086, AI035415, AF134726, AC006327, AC006285, AC003966, AC006960, AL079340, AC004913, U78027, AC005913, AC008101, AC005011, AI121769, AL049709, AC004228, AC005914, AI1008583, AC004998, Z69838, AI031295, AC006312, AC006312, AC002301, AL080243, AC012627, AH020871, AP000493, AC005231, Z97056, AC011934, AC010170, AI078474, AI023580, AL022377, AC005057, AP000123, AP000213, AC002365, AC008055, AP000194, AI035422, AC005296, AC005412, AC004972, AF039907, AF038667, AI031602, AC006367, AI031283, AC005409, AI034421, AP000512, AF165142, Z84480, AC002316, AF053356, AC005756, AC003079, AC005778, AC005071, AC007262, Z98742, M84472, AC005332, Z84484, AC009044, AC007967, </p>



HCUE90	568	578714	1 - 199	15 - 213	AL133485, AL022318, AF024533, AL049776, AC005037, AC002312, AC005924, AC007298, AC005288, AC004234, and 293241.
HCUE93	569	784414	1 - 113	15 - 127	AC005913
HCUE90	570	578745	1 - 141	15 - 155	AF024533, AF030453, and AC005088.
HCUE155	571	959552	1 - 110	15 - 124	
HCUE169	572	757657	1 - 526	15 - 540	
HCUEK37	573	964869	1 - 331	15 - 345	
HCUE128	574	706456	1 - 289	15 - 303	AA782338.
					AI097211, AI446336, R92902, AI539685, AA775205, AI438967, AC007021, AC007564, U95739, AI049576, AC006077, AC006312, Z85987, AC005821, AC003663, AC006323, U95743, AC003026, AC011331, AF001549, AF029308, AC003037, AL136453, AC006965, AC005011, AC005764, AL023807, AL096774, AC005740, and AC005886.
HCUE191	575	576568	1 - 119	15 - 133	
HCUEM23	576	576379	1 - 373	15 - 387	AC006531.
HCUEM35	577	861545	1 - 307	15 - 321	
HCUEM62	578	576575	1 - 248	15 - 262	
HCUEM34	579	706452	1 - 333	15 - 347	
HCUEM58	580	738225	1 - 453	15 - 467	
HCUEO17	581	932118	1 - 252	15 - 266	
HCUEO30	582	769203	1 - 274	15 - 288	AL039309, AA985145, AA558404, N52501, AI884861, AA657910, T55707, AA904211, H48017, AI431513, AI049504, AW341882, AA486819, H86579, AA774006, AA662431, AI800343, AA584756, T02817, H47295, AW089016, AA527109, AA502813, AA018923, AA012829, AI583291, AI816136, AW081503, AI471455, AW407388, AA053463, AW117723, AI826857, AW392414, AI251576, AI687343, AI306232, AW274191, W63553, AI583466, AI201668, T59930, R48980, AI306717, AI811647, AA429481, N22395, AA368329, AA599749, AA577855, AI031759, AA827383, T74524, AA214109, AI628859, AW019964, AA434078, W92433, AI801824, AA339789, H86133, AA347867, AW301855, AA767257, AA548692, AW148886, AI697383, AI065031, AW029626, AI888050, AW117704, AI417586, AI300818, AL041924, AI310992, AA745628, AI267356, AA278496, AA287502, AI267459, AI369925, AA535756, AI434365, AA573000, AA374797, R02063, AW009653, AI831172, AA993165, N59744, H53284, AI279417, H73306, AI002863, AI869797, H54252, AL041352, AI049680, AA302978, H47296, AA916794, R84528, AA947265, AW078509, AW190277, AA486820, AI340151, AA364073, AA374523, R39627, AI872461, AA230146, AA733171, AW162303, AW084173, AA878407, AI459866, AW162047, AA295899, AI277318, AI860535, AW161786, AW117915, T51436, AI873627, AC002128, AC006356, AC004685, AL050338, AC004554, AC005518, AC006512, AC006023, AC008101, AC008079, AC007567, AC005722, AL031985.

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HCUE031	583	576551	1 - 229	15 - 243
HCUE041	584	576524	1 - 447	15 - 461
HCUE062	585	578713	1 - 387	15 - 401
HCUE079	586	850090	1 - 330	15 - 344
L78810				
AW248352, AW249168, and AA628425.				
AA129273, AA129373, AF761842, F20339, AW291115, AA485396, AA835966, AW079768, AL287824, AW243878, F32537, AF190297, AL197911, AL828574, AA830626, AL758715, AA464646, AL560298, AA629936, W31910, AA936135, AA810103, AW087812, AL801167, AL559162, AW087203, AL021407, AL137300, AF019767, AL133104, AC002480, AF030635, and L78810.				

HCUEP01	587	913675	1 - 449	15 - 463	AC004967, AC005206, AC005667, and AC005519.
HCUEQ37	588	881486	1 - 349	15 - 363	AL008718.
HCUEQ56	589	751410	1 - 442	15 - 456	AW452694, and AA977635.
HCUES29	590	579033	1 - 406	15 - 420	
HCUES34	591	850096	1 - 406	15 - 420	AA084609, A1312309, A1678287, AW151848, AA757621, AL037927, A1962030, A1306717, AW084173, A1567076, AA984920, AA528359, AW402784, A1065031, A1042753, AW238495, A1186233, AA823827, AA949630, AA584655, AA747375, AA584756, A1689135, AW192179, H29914, T67090, A1303008, H40878, AW328027, AA551548, A1078581, AC007199, AC005821, AC005736, AC005081, AC005722, AC007285, AC005520, AL049301, AL049538, U80017, AC002477, AC020663, AL031311, AL021453, AC005015, Z69921, A1219756, AC000120, AC002314, AC006530, Z69653, AP000065, AL035400, AC005519, AP000512, AB001523, AL117258, AF207550, Z98742, Z99128, AC007225, AC004838, AC006146, AC003696, AC007386, AL133245, AP000121, AC007686, AP000045, AC007363, AC000041, AC002115, Z86990, AP000704, AC002350, AC005102, AL049697, AC005057, AC007537, AF064861, AC002306, AC005280, AC004560, AC003957, AL031602, Z98941, AC005899, AC005837, AC005488, AC002059, AC003353, AC004622, U91326, AC004531, Z83856, AP000688, AF111167, AC004967, AL022316, AC002544, AC005746, AC004841, AC000118, AF001548, AC005682, AL049758, AC005220, AC003041, Z93930, AC007327, AC006312, AC004796, Z93244, AC004685, AC005829, AB003151, L44140, AC004962, AC004659, AC005562, AC007868, AC004408, AL096701, AC005049, AC004019, AC005500, AL023553, AB014079, AF165926, AL078463, AC009509, AC004477, X64467, AC006026, U63721, AC006120, L77570, AC004263, AL009179, Z95152, AF111168, AC004491, AC007240, AC006023, AP033356, AL022326, Z97054, AC007731, AC001231, AC005484, AC003982, AC005094, AC004686, Z83844, AP001038, AC000159, AC007367, AL031985, AC005412, AL049843, AC006338, AL021917, AF045555, AC006077, AL031295, AC003029, AC004383, AC002039, Z81364, AP000008, AC002492, AP000208, AP000130, AL096791, AC004148, AP003355, AF196969, AC002312, AL031662, AP000556, AL139054, AC007637, AC006111, AC005387, AC005355, AC012384, AC005288, AL021546, AC006254, AC007536, AC005031, AL035420, AL022165, AC004655, AC004583, AC004876, AC005529, AP000044, AL049776, AF003626, AF196971, Z68284, AC007314, AC006130, AL034420, AP000112, AP000504, AC002299, U62292, AL109984, AC006285, AC005952, Z84466, AC006141, AL049569, AC004675, AL009181, AC005237, AC005730, AC005772, AL031282, Z83826, AP000558, AC007384, AL031587, AC007387, AL050341, AL135744, AC008372, AC006011, AC005618, AP000113, AC000026, AF196970, AC002094, AC006014, AC007226, AC002395, U63630, AF001549, AP000692, AC006441, AC004859, Z97056, AL080243, U91321, AC005632, AF006501, AC006101, AF134726, AC005212, AC002316, AC004755, AD001527, AL109827, AC005756, Z95116, AC006947, AL022324, AC006449, AP000248, D87675, AF038458, AC004941, AL020997,

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				AC004821.
HCUE593	592	576498	1 - 415	AW292137, AL039500, AL248007, AL078021, AL750999, AL476735, and Z95437.
HCUE113	593	657258	1 - 160	AA353854, AC004659, AC004771, AC005914, AC005245, and AC007182.
HCUE127	594	306339	1 - 167	AC007281.
HCUE110	595	964857	1 - 269	
HCUE020	596	970780	1 - 274	
HCUEV08	597	959670	1 - 340	
HCUEV17	598	905316	1 - 1428	Z95116.
			15 - 1442	AA585439, Z28355, Z30131, AL525556, AL535639, AA585101, AL541374, AA585453, AL557731, AL547039, AL525431, D80253, AL541365, AL045817, AL525306, AL041142, AL041238, AL041133, AL047183, AL040322, AL041131, AL046330, AL041051, AL041292, AL040119, AL047036, AL047170, AL047057, AL047219, AL041227, AL040463, AL039961, AL040625, AL043612, AL041197, AL040155, AL041346, AL040529, AL041096, AL047012, AL041358, AL041277, AL041163, AL041098, AL040621, AL040353, AL041324, AL040464, AL044162, AL041086, AL043496, AL041296, AL041233, AL540967, AL040510, AL041159, AL045725, AL041140, AL546999, AL040193, T11028, AL043467, AL044186, AL041278, AL040437, AL040091, AL040128, AL040168, AL040553, AL040255, AL040285, AL040342, AL040332, AL040617, AL045684, D61254, AL040745, AL040370, AL043677, AL046442, R29445, AL040149, AL040839, AL041752, AL043775, AL044165, AL043492, AL041602, AL045920, AL038838, AL546945, AL044074, AL041635, AL045990, AL040253, AL040458, AL044199, AL044187, AL040090, AL040263, AL040294, AL040329, AL040082, AL044272, AL041186, AL040148, AL041730, AL041523, AL043627, AL041374, AL040052, AL040385, AL043537, AL541523, AL039338, AL042135, AL044064, AL038983, AL039316, AL043923, AL043814, AL043848, AL041459, AL043570, AL041577, AL044201, AL044258, AL046850, T23985, AL038532, AL040768, AL037727, AL526194, AL046994, AL040414, AL040571, AL040576, AL046914, AL142134, AL045753, AL044274, AL079878, AL049018, AL040444, AL045857, AL039744, R28735, AL038822, AL045671, AL536138, AL040238, AL040637, AL041168, AL049069, AL043444, AL040075, AL557262, AL541514, AL041246, AL040472, AL041347, AL541535, AL041955, AL038761, T23957, AL080031, T41289, AL045989, AL56967, AL546828, AA589476, R29177, AL044529, AL525316, AL557787, AL526073, D51250, AL046147, T23888, D80219, AL546891, AL546855, AL039643, AL541508, C16305, AL525320, AL042096, AL526140, D59787, AL037436, AA585434, AL541510, D80043, AL039360, AL037435, C16300, AL039924, D80227, AL045794, AL535983, AL044125, AA585356, AA174170, D57491, AL079852, AL541307, D80240, AL535660, AL557799, AA546875, AA585407, AL541017, AL043441, AL039150, AL557807, AL541205, AL038821, AL039085, D80134, AL043445, AL541534, AL541509, AL045211, AL039156, D51423, D55233, AL557238, T24112, T24119, AL039564, AL039538, T11051, AL039108, AL039678, AL039837, AL038837, AL039625,

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HCUEV82	600	881370	1 - 224	15 - 238	<p>Z99128, AC005924, AC005694, AC006165, AC005037, AL021546, Z995116, AC005020, AP000141, AC007938, AC002126, AC002375, AC007057, AF003587, AC0007731, AL049872, AC005102, AC007298, AF060368, AC005666, AC004859, AC003043, AC007701, AC005500, AC005911, AL035072, AF207650, AL034343, AL049764, AC005325, AL121603, AL049694, AP000665, AF053356, AC005971, AL031985, AC006958, AL031980, AL049757, AL049760, AC0002350, AC004985, AC005086, AC005207, AB003151, AC006211, AC005821, AC002115, AC005081, AC002996, AC004953, AL049795, AF000688, AL117694, AL078463, AC004305, AL109628, AC007314, Z95114, AL031432, AB023051, AL049869, AF000300, AC004477, AC002316, AC000085, AC005206, AL035249, Z81314, AC009510, AC002550, AC005175, AC004560, Z94802, AC004777, AL109963, AC007327, AC005484, AC004804, AFI65926, AC004955, AC004551, Z82217, AC006501, AC002400, AC004883, AC002990, AC005002, AC006111, AC005585, AFI96779, AC004079, AC004033, AC005412, AC007226, Z83822, AL009181, Z98257, AC007993, AC007227, AC005752, AC005921, AF038458, AC002425, U80071, AC002094, AC002300, AC004217, AL022238, AC004815, AC018633, AL109952, AL034429, AL049631, AC007382, Z97352, AC004549, AL031777, AC009464, AC005057, U95090, AC004890, AC007917, AL117354, AF001550, AFI11169, AC005667, AC004378, AC004796, AC005914, AC004099, AC007690, Z98752, AC003029, AC006312, AP000032, AL008718, AL031659, AL031680, AC004386, AL096701, AC007199, AC008038, AC004167, AC004922, AP000045, AP000113, AP000116, AL021578, AC003101, AC002544, AL031984, U78027, AC005011, AC005274, AL049748, L23859, AC005740, AP000512, AC006023, AL122020, AL021155, AL035683, AC004212, AP000331, AC004156, AC005792, Z85986, AC005529, AL031594, AL049643, AC004616, AC005330, AC005305, AC005507, AC004967, AC002119, AC005535, AC006449, AC005913, AC005332, AL133353, AL049843, AC019014, AC005328, AC005071, AC004000, AC005058, AD000092, AC006509, AC005377, AL078638, AC006011, AC004526, Z93930, D87675, AC005783, AL022302, AC004876, AC006237, AL049709, AC006276, AP000143, AP000047, AC004743, AC007225, L78833, AC004263, and AL035422.</p> <p>AA348602, AL183596, AL798313, AL089178, AA553900, AL042987, M78032, AL1809300, AA587812, AL038324, AL241637, AL347649, AL628922, AA179940, AA657416, AA655005, AA021139, AL1039943, AA438946, AA558366, AA346861, AL147427, AA831426, AL1090377, AA594719, AL484892, AL1188049, AL192465, AL347478, W76645, AA526542, AA569065, AFI754421, R67701, AA683091, AA350406, R93854, AA215685, AA326452, AW264393, AL047849, AA808631, N47855, AW327852, AA557911, AL1803741, AA572921, AL923052, NS2323, AA297443, AC002429, AC005907, AL031311, AC005527, AL049636, AC003029, AC004584, AC000035, AC004966, Z85987, AC005529, AC005535, AC005036, AC004876, AC002312, AC000025, U82083, AL049872, AC004910, AL031005, Z94802, AC005057, AL000092, AC004841, D87675, AC004953, AC006487, AC004056, U10634, AL031295.</p>
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HCUEW/19	601	576513	1 - 344	15 - 358	AL801600, AW193265, AL041368, AL350211, T06828, AA553465, AW104748, AL625244, AL688846, AA652057, AA649642, AL284640, AA831527, AA513972, AL918421, AA503258, AA669251, AW301350, AW303196, AW274349, AA346458, AL367975, T10617, AW193432, AW236342, AL580652, AL367497, F18974, AL345654, AA719805, AL708009, AL298710, AL282832, AL434695, AL355206, AL610159, AA501600, AL281697, AL270117, AL446464, AW129001, AL634384, AL287651, AA228420, AW406659, AA688036, AA594145, AA347927, AA347930, AW088058, AL872227, AW079515, AA984708, AA719808, AL341664, AL041690, AL691772, AA493206, AA251117, AA649705, T71030, AA557879, AL886629, AL805679, AW021747, AL696962, AL266133, F29702, AA664015, AL044940, AA745582, AA551503, AA368936, AW072587, F19012, AL474772, AA367986, AA568778, AL046409, AA824655, AA824654, AW439558, AL714881, AL002834, AA252763, AL138263, T15977, AL431303, AW276827, AA515224, F36273, AL613280, AL340453, AL041412, AL565582, AL291124, AW062724, AL802526, AL160117, AW238278, AA539266, F33511, AA100599, AL282336, U51696, AL291268, AW338086, AA302963, AW339568, AL375710, AA723017, U18396, X54176, U51997, U57004, X55022, U18399, U18393, U18398, U57006, X55930, U18394, U57005, U57009, U18391, U18392, X55925, U18390, U14684, X55926, X54180, U18395, U14701, U57008,

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HCUEW58	602	850061	1 - 395	15 - 409	H59974, H80899, AL020997, AC007308, AC005081, AF045555, AC007637, AC004686, Z95113, AC004953, Z81369, U95739, AC005049, AL079295, AC002302, AC004491, AL122020, AC005488, AL049869, AL008721, U89337, AC003009, AL031584, AF152365, AF1227686, AC006013, AC003663, AC005325, AC007938, AC004854, AC006515, Z95970, AL117337, AL121655, AC005005, AF190631, AC006115, AP000510, AL022316, AC006101, AC0007785, AL008726, AC004859, AC005391, AC005102, AL031311, AL132992, AC004477, AC004704, AC004019, AL080243, AL132777, AB023048, AC005632, AC009721, AC007263, AL022343, Z74617, AC006111, AC005971, U07562, AC004685, AC003029, Z82208, AC006271, AC005899, AC004832, AF064861, AL022318, AL246003, AD001527, Z97054, Z93930, AC005288, AC003689, AC004762, AL109738, AC005015, Z98946, AC006040, AF001549, AC005011, AL121658, AC004893, AL003147, AC004785, Z84467, and AC002369.
HCUEX74	605	951897	1 - 326	15 - 340	AF150416.
HCUEY29	606	920419	1 - 378	15 - 392	
HCUEY48	607	576519	1 - 387	15 - 401	R24915, N32878, R07374, AA748826, AA772016, AL287921, AL051037, AA026829, AA509065, AA745536, H91884, N64587, AA879033, AA055601, AL1984593, AW271917, AL657416.



HCUEZ88	608	576537	1 - 326	15 - 340	AL028483, and AW023910.
HCUFA05	609	932116	1 - 385	15 - 399	Z93023.
HCUFA38	610	675677	1 - 324	15 - 338	AA626710, AW138429, AI087993, AI077877, N69907, AA657613, AW162236, AI161164, AL356294, and AC004067.
HCUFBI5	611	660460	1 - 257	15 - 271	
HCUFBI89	612	746601	1 - 305	15 - 319	
HCUFJC22	613	951134	1 - 306	15 - 320	
HCUFJ09	614	625728	1 - 292	15 - 306	T64920.
HCUFJ64	615	576574	1 - 102	15 - 116	
HCUFJ32	616	920281	1 - 227	15 - 241	AA679737.
HCUFK94	617	722999	1 - 175	15 - 189	
HCUFJ02	618	932429	1 - 447	15 - 461	AC000159, and AB007864.
HCUFJ15	619	575844	1 - 448	15 - 462	
HCUFJ35	620	677853	1 - 413	15 - 427	R98755, R98754, AA642005, and AW292993.
HCUFJ77	621	575843	1 - 357	15 - 371	R09221.
HCUFJ60	622	730707	1 - 444	15 - 458	AI824538, AL375432, AA887250, AJ914747, AI91321, AL034400, AP001052, AL021155, AC004821, AL133500, AC004985, AL049869, AF134726, Z73964, AC004812, U91318, AC002070, AC003950, AC006441, AC007227, AF001549, AC005829, AC004834, AC002476, AC002394, AC005919, AF064860, AC004687, AC005484, AC004382, AC004491, AC006014, AC002126, AC007565, AC005527, AC002996, AC005971, AC007371, AC004448, AC005057, AC005182, AC004646, Z97054, AC004851, Z98044, AL027313, AC009330, Z79905, AC000093, AC009542

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R47962, AA731533, and A950023.					
AA046457, A1373707, A1864613, AA054000, and AA015959.					
R89560, AA483606, AA570740, AA568204, AA664126, A1250262, N63755, AW083408, Z22963, AA015948, AA768179, AA482725, R89906, T05684, AW152348, AA565679, AA302978, AA633981, A1114772, A1866911, AA503018, AW002330, AA731361, AA487709, AW151018, A1821382, A1820534, H56703, A1120052, AA626411, A1801649, T50251, AA676592, AA810837, AL039801, AA229823, A1065038, F35684, AA228979, A1804539, N24909, A1889579, T51436, AW272815, AA572921, T63030, AA515723, N71619, AA564925, AA837771, AA745297, F31811, AA297006, A1800345, T05617, AW419126, H62923, A1709180, AA228442, AA862075, R34070, AW021608, AA507343, A1791437, N37070, A1732483, F00949, A1041595, H07953, H69653, N95817, A1206078, A1048838, AL041019, AL048825, AA177013, H59651, AW409763, AP000163, AB022537, AC005841, AL031228, AC005858, AB019437, Z95704, AC005192, AC002377, AC003083, AL035494, AC005799, AC004986, AL031432, AC005632, AC004772, AF109907, Z97180, AC005837, AC006406, AC004858, AC004987, AL031277, AC002550, AC003007, AC005820, I34294, AP000548, AC000120, AP000365, AC007277, Z93023, AL022721, AC005089, AC004855, AF139813, AC006597, AC006512, AC007731, AC005500, AC005575, AL096701, AC004910, AC004526, AL096712, AC007227, Z83844, AP000561, AC006030, AP000116, AL049872, AL050318, AC005057, AL109980, AC004033, AC003025,					

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					AW403674.
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					AA077835, AF149915, AC005914, AC007785, AC005082, and AC006371.
					AA361129.
					AA618332, and AC0004883.
					T65857, AF1678013, R44293, R40978, H24231, P01849, AW177822, T92856, AW177816, AC006537, U73166, AC006512, AC000353, AC005102, AC004685, and AC000458.
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AI160786, AA323293, AA736557, AA594719, N41775, AA579799, AA508036, AW440368, AL134167, AA553457, AF732911, AI904944, AA515926, AI459904, AI284045, AA846023, AW054936, H38769, AA502207, AI918419, AW102811, T90477, AI824476, AA715508, AW338860, AI819391, AI567391, AI749893, H12857, R69819, AI823705, AW028950, AI925065, AI025930, AW161016, AW088631, N68449, AA715075, W24312, AW238253, AI135184, AI355873, AA847831, F35684, AA558748, AA501867, AI879951, AI335963, AI135154, AA93636, H79586, AA599080, AI114704, AA219349, AA634926, AA503018, AI306717, AI948480, R60004, R83068, R67701, AI120543, AA772704, AW264901, T54144, AA297207, AI15173, AI250262, AI417586, W95552, C14330, AA326904, AA564682, AA469172, T51556, AI923052, AA493947, T50676, AA336058, AA582374, AI289050, R93919, AA388091, AA603264, AI284092, AA230146, AI479068, AA650447, AC005971, AC014549, AI035457, AC006547, AC004765, AC005696, AC006317, AI109952, AI096791, AI049589, AC000003, AC000134, AI031848, AC006057, AC006512, AI035588, U47924, AP000337, AP000216, AC006581, AI096701, AC006449, AI020996, AI049759, AI049643, AC006141, AI035443, AC004858, AF015416, AI031291, AC004815, AF045555, AI109628, AC004148, AF109907, AC006088, AC005664, AC005531, AC005566, AC004882, AC003037, AC005632, AC007637, AC005081, AC004263, AI035405, AI023879, AI027271, AI022400, AC002350, Z99943, AC005519, AC005529, AI022238, AC007917, AI035588, AI031295, AC004019, AI021939, AC005874, AF134471, AC005952, AI031737, AI049869, AC002369, AI049653, AC004262, AC005881, AP000566, AC010206, AC000097, AC005089, AI020995, AC005921, AC004668, Z98750, AC005237, AC004106, AC005736, AC006211, Z83840, AI096773, AC006480, AF047825, AC004098, AC004587, AI09179, AF146024, AI049697, AI135783, AI080243, AF200465, AC006597, AI023803, AC004675, X55448, AC005859, L44140, AC005082, AC004223, AC005046, AD000092, AC007552, AC007371, AC006464, AC002992, AC003108, U91324, AC005837, AF196779, AB012286, AC004985, AC006017, AC009247, AI049839, AF088219, AC005670, AC005729, AC005488, AC002300, AC003010, AC007934, AC004859, I34294, Z95331, AC003024, AC004967, AP000033, AC005057, AP000509, U91326, AI133555, AC004757, AC005651, AC005765, AC002344, AC000052, AC007993, AC006121, AI049776, AC007566, AC005154, AF064861, AI003147, AP000310, AP000309, AI035400, Z83826, AC005777, AC002394, AP000048, AC005376, AP000116, AI031230, AC004216, AI035447, AC007228, AI109984, AC005913, AC005011, AC006071, AR036572, U91328, AC006210, AC005962, AD000812, AC002126, AC004050, AC007406, AC006064, AC003043, AP000555, AC005618, AC006390, AC006014, AI035071, L77570, AP050154, L78810, AP000229, AP000144, AI109967, AC004583, AC007057, AI049872, AC003665, AC005726, AI031321, AC007201, AI031707, AC005578, AC004974, AC003690, AC000090, AC007938, Z73359, AF196969, AI031767, AC005822, AP000355, AC006208, AI022311, AC004629, AI136295, AC007687, AC007055, AC004042, AI033543, AC004000, AC004099, U91318, AI031587,			
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HCUFX24	641	577266	1 - 178	15 - 192	AW449501, and A1751021.
HCUFY27	642	850067	1 - 564	15 - 578	
HCUFY27	643	669876	1 - 112	15 - 126	
HCUFY35	644	577130	1 - 337	15 - 351	AW339568, AW270284, AL305766, AL298977, A1565581, AW102955, A1345522, AA658235, A1357551, AL020395, AL344844, AL120008, AL340453, A1557323, F33121, AL708009, N69962, A1937850, AA225201, AL379719, W07122, A1110848, A1880168, AA637741, A1053786, A1254338, AL349874, AL134330, AA993198, A1801591, A1084012, AW169687, AW403720, AL345654, AW265009, A1802526, AA581903, AA569284, AW327360, A1697353, AA369477, AA484148, AF034176, A1423941, A1473943, A1889765, A161293, A1923140, A1924251, A1888110, A1890928, A1890570, AW157326, T171998, A1225141, AW265294, A1358571, AL043756, AA715362, AA251117, AA715270, N43757, AL023575, A1031675, Z98950, AC006211, AL033397, AL049780, AC007055, AC006146, AL034419, AP001039, AC007540, AC005544, AF042090, AC005226, AL033381, AC005906, AC005245, X13921, AC002536, AL021391, AC002430, AC007384, AL049557, AP000295, AL109754, AC005856, Z85996, Z95113, AL022318, AC005684, AL022396, AC002394, AF091512, AC005548, A1003147, AC004381, AL031311, AC003087, AC004228, AC022517, AP000354, AC007917, AC005821, U63721, Z82194, AC005274, AL137191, AC005386, U07000, AF011889, AC005772, AC004408, AL022147, AC006037, AL031668, Z98049, Z98257, AC007160, AL121580, AL031447, AC007652, AL034376, AC004770, AC006213, AF064866, AB015752, AF029308, AC005722, AL109758, AL132987, AC005070, AP000356, Z84814, AC006840, AC002470, AL034350, AC006996, AC005005, AC005912, AC008012, AL031368, AL034370, AC002070, AC007878, AP000245, AD000684, Z97205, AC009405, AL021977, AF001552, AC005664, AP0000938, AC005697, Z93942, AC005820, Z94044, AC005694, AP000566, AC004887, AP000120, AP000167, AP000032, AC004941, AP000961, AC006253, AC006547, and AC005220.
HCUFY40	645	967273	1 - 194	15 - 208	
HCUFZ81	646	878882	1 - 346	15 - 360	W24312, AA634926, F11421, AW007247, H60486, AA569089, AA938390, Z95331, AC006441, AL022316, AF111168, AL035659, AC012384, AC002378, AC002565, AC007546, AL079342, Z99716, AC005952, AC005225, AC005722, AL109627, AC004876, AP000356, Z83840, AC002119, AL109657, AC005736, AC005089, AD000813, AC007066, AL049856, AC004832, AL080243, AL096791, AP000349, AL049709, AC005091, AC007011, AP000113,
HCUGB48	647	880730	1 - 470	15 - 484	

HCUGC96	648	575825	1 - 546	AP000045, AL035249, AC006449, Z983304, AL033392, AC002040, AL031662, AC004099, U82668, U80017, AL035086, AC004966, AP000493, AC007384, AL035695, AC005360, AC007182, AL133448, AC005903, AL034549, AL022322, AC005355, Y07848, Z93020, AL030996, AC006001, and AC005031.
HCUGD15	649	660343	1 - 429	R64618, and R64619.
HCUGF18	650	666495	1 - 309	AI821309, T57578, AI820666, T91659, AI732244, T93260, AC007344, AC002542, AL139054, and AL109946.
HCUGF61	651	741842	1 - 393	AC0009411.
HCUGG25	652	678112	1 - 164	AC0009411.
HCUGH01	653	916600	1 - 316	R09190.
HCUGH30	654	778735	1 - 436	AI248117, N34987, and AI242866.
HCUGH34	655	706469	1 - 300	AP000011, and AP000153.
HCUGH83	656	862078	1 - 188	AA011550, AA854029, AI808348, AA448255, H61005, AL035067, AL121934, and AC000004.
HCUGI29	657	584711	1 - 669	AF150363, U25791, and Z64124.
HCUGI54	658	715310	1 - 154	AW131457, AI792578, AI054419, AA720732, AI244356, AW008089, U95742, AL121603, U91326, AC002344, AC004019, AL022476, AC005527, AC005668, AL034420, AC005670, AC008044, AC007216, AL031255, AL133245, AP000501, AC005971, AC006486, AC003104, AC010169, Z97205, AL022336, AC005484, AC005529, AL109985, AC006948, AL096791, AC003101, AC002312, AC004967, AL121658, AC005031, AC002470, U80017, AL109827, Z81364, AC005921, AC005839, AF205588, AP000105, AP000037, AL049795, U47924, AL117337, AP000354, AC002369, AF190465, AL031670, AF134726, AC005529, AC006441, AC005399, AP000228, AC006241, AC007201, AP000140, AC003688, AC005800, AC004230, AC006312, AC006384, AP000275, AC006511, AC006538, AC007386, AL021368, AL049776, AP000088, AC005482, AC006972, AC005412, AR036572, U91328, AC004655, AC006116, AC004526, AC005841, AC005539, AL049869, and AE000658.
HCUGK91	661	790218	1 - 135	AI049931, AL133226, and AC007685.
HCUGL14	662	658467	1 - 313	F33566, N71930, AL0042753, AI888008, AI499094, AC002119, AC005772, AL031589, AF165926, AC006241, AC007676, AC012599, AC005730, AL008582, AC005057, AC009248, U62293, AC005527, AC004686, U85195, AC006273, AL021154, AL035414, Z98051, AL133245, AE000658, AL096701, AL035684, AL050333, and AC002115.
HCUGL84	663	496491	1 - 304	T63954, AA648150, AW438856, W04941, AW236344, H85059, AI016704, AA188665, AW277253, R44641, AA714586, AA593471, AI472075, R70333, AA297698, AA043218,
HCUGM08	664	959488	1 - 364	

AA206629, AA078831, F01222, N54179, A1797901, A1797892, A1345717, A1287921, A1020997, U62293, A1035681, AC005057, AC005089, AC006285, AC016025, U80017, AC007919, AC005162, A1031848, AC005081, A1034429, AB011134, A1031846, AC010209, AC004686, Z49236, A1049759, A1049539, AC005914, A1022320, A1007042, AC006077, A1049776, AC006064, AC007191, AC005480, Z83826, Z99943, A1021808, AC004999, A1035684, AP000359, AC005387, AC005215, AC005058, A1021393, A1049874, AC002347, AC006001, A1035072, AC004859, A1031255, A132987, AC001228, AC004817, A1031276, AC005837, A1008582, AC005210, AC004814, AC005411, AC005280, A1096712, A1031263, U02050, U82672, Z84480, A1033479, U66061, AC004217, AP000752, AC000353, AP000556, AP000031, AB015703, A121769, AC005520, A133448, A1034430, A133163, L48038, AC009516, AB007956, A1022326, AC004882, A139054, AC004019, AC007160, AC005082, AP000134, AP000212, AC006501, A1239325, AC004531, A1031431, AC020663, AC00486, A1049713, AC003029, AP064858, AR060394, AC005839, U62292, AC005399, AC004000, A1031005, AP000563, A1031666, AC005512, U82671, Z93020, AC005529, AC006047, AC000026, AC004887, A109758, AC005231, AC004216, AC007151, A1312777, AC006211, U63721, U95742, AC002059, A1031311, AC004990, Z99127, AC002404, A1035398, AF165926, AC005887, AC005216, A109628, AC005746, AC006111, AP000141, AC004526, AC005874, AF134471, A1021154, AC004841, AC003966, AC007308, AP000512, A1049869, A1049712, AP000558, AP000211, AP000133, AC003109, Z97054, AP000509, U95740, AP000556, A121655, AC002470, AC005015, AC004520, AC004704, A1023879, Z74739, AC004057, AC005348, A109839, AC002511, AB023049, AC010206, AF064866, AC005900, AP000088, and AC006479.
AA702118, AW381452, W95006, W95007, and AC002375.
AA127364, AC004033, AC005500, A1049856, AC007731, Z98941, AC002477, AC006088, AC002390, and A1021391.
AC002559.
Z54621.
A1686509, A1670941, A1380740, A1652572, A1810486, AA251386, and AF070587.
AA492380.
R96187, AA327572, R96188, AA382056, AW084237, A1791180, A1821138, AA508578, AW194802, A1623409, AA649148, AP932902, A1707289, AA669816, H54292, A1889612, A1623423, AA573189, A1041364, AA085863, AA380599, AA357240, AA078084, AA594725, A1926366, N54179, A1446638, T61853, A1660594, AA365144, AA584749, A1124660, AA650135, AA864575, AA806762, AA524668, A1863399, C14600, A1064952, A1963720, AA516326,

				AA351926, AA947837, AA826144, AL046409, AA078483, AL345161, AV021917, AA525915, AA483043, AA7082213, AA167741, F31799, AW150689, F37223, AA715606, AL678392, AI110770, AI453233, A274064, AL613280, AL041450, AW194269, AC006001, AL678392, AL031286, AC004477, AL049795, AC007637, AC004491, AP000289, MI15958, AC003010, AP000042, AP000110, AC005332, AC004383, AL078584, AC007376, AC004985, AC002364, AC004216, AC005778, AC002984, AC007686, AC002527, AL049869, AC006285, AC007011, AC016025, AP000514, U95740, AC002996, AL031985, AL022328, AC005632, X87344, Z84487, AC002350, AC004134, AC007564, Z84469, AC004000, AP000502, AC004217, AL030343, AL117694, AC006251, AC002365, AL031594, AC005006, AC004020, AC006088, AC006430, AC006538, AC005224, AC002301, AC007685, AC005261, AC002331, AL031311, AL031683, AC003108, AC008124, AC003037, AC005736, AF134726, AC005996, AL117552, AC004770, L78810, AC004448, AC005488, AC005072, AC005015, AC004968, AD000092, AL031584, AL022339, Z99716, AC004552, AC003663, AC002041, AJ011930, AL133353, AC005104, AL049872, AF001549, AP000065, AC005229, AF196779, AC005971, AC005932, AF030453, AC005089, AC005666, AC005258, AC004938, AL121653, AC004019, AC005088, AL049766, AC006597, AC005722, AC005067, AC005513, AC007056, AL034554, AC006014, AC007298, AC003070, AC004125, AC003983, AC007690, AP000557, AC007050, Z82178, AC002132, AC004983, AL031587, AC005899, AL121655, AL121603, AP000113, AP000045, AC005379, AC005755, AL034548, AL078621, AC005187, AC005252, AL035530, AC002126, AL022329, AC007541, AC005747, AC004910, AP000167, AP000052, AP000692, AL049643, Z93017, AC008115, AC003689, AL121852, AL133448, AL049759, AL139054, AL121748, AC006372, AC007731, AP000556, AF001548, AL031010, AL049758, AC003007, AL031589, AL031729, AC004253, AF024533, AL133382, AC005288, AC005184, AC007666, AC002352, AC004195, AP000553, AF031078, AP000116, AC007055, AC004841, AC005519, AC005414, AC004933, AC009464, AC005912, AC004815, Z82244, AP000211, AP000133, AP000049, AC006312, AL121694, AF030876, AC005081, AC008928, AL049760, AL121652, AF053356, AC005230, AC005529, AC006480, AL035681, AC005231, AL049709, AC006006, AC007671, AC006650, AP000311, AC006079, AC004821, Z92540, AC005280, AC004531, AL049829, AL031427, Z98751, Z93244, AL022336, AC004859, AF091512, AC003026, AC003972, Z85986, AC004757, AC002400, AL049712, AL033527, AC004765, AL031053, AC005412, AC005158, D87009, AC005876, AC004099, AL031447, AC002425, AL035447, AL035400, AC005599, AC007214, AC005057, AB023048, AC012384, AL031767, AF139813, AC007276, AL050307, AC005037, AC006203, U52112, AC005914, U85195, AB020863, AL133355, AL031846, AL022326, AL117238, AC005531, AC007684, AC007227, and AC004949.
HCUGV60	675	496443	1 - 412	AC007964, AJ229041, AF020802, and AP000687.
HCUGW04	676	960596	1 - 257	AI557735, AI541487, AI541489, AI526178, AI55747, AI541516, AI526200, AI557797, AI541491, AI557718, AI541501, AI526151, AI557724, AI557740, AW393605, AI526177,



HCUGY26	677	953550	1-480	15-494	<p>AI526179, AI541535, AI557789, AI541490, AI526127, V00124, V00125, I00032, I00030, I00036, J00034, J00037, J00038, AB010555, and AB0010556.</p> <p>TH69144, RI1217, H81306, AL0315495, AC004836, AP000350, and AC020663.</p> <p>AA580889, F35659, AA464644, AI064804, H29303, AA610491, AI792108, AI791929, AW274349, AW301396, AW301350, WA5336, K89436, AW338086, AA663306, AI886629, NZ7353, AA847997, T06652, AI872460, AA558227, Z81364, AI080243, AP000558, AC000557, AC009516, AC006016, AC007556, AP000556, AC008372, AC008372, D87001, D88268, AC007021, AC005574, AC004741, AC006019, D87675, AC004614, AC005542, Z84487, AC004859, AF011467, AL031686, AC066441, AL035411, AP00141, Z75894, Z75895, AC004467, AC006313, AP000888, AC004814, AL031122, AC005071, Z98884, AF090944, AL008582, AC004702, AC004894, AL031662, AC005899, AC00035, AC005049, AC004821, AC005690, AC004448, AC007934, AC005971, U95743, AI109963, AL024474, AP001014, AP001052, AC006925, AC006211, Z49736, AC006561, AC002369, Z84480, AC002456, AP010598, AL031276, Z98052, AC002981, AC005531, AL032549, AC009247, AL021757, AC006057, AL049856, AC006630, AI109847, U66059, AC004841, Z85987, AI133245, D86999, AC000090, AC006292, AL050332, AC006203, AF011168, AL023713, AC008984, AC004777, AL031767, AL022337, AC005799, Z84488, AC002289, AC002485, AC010072, and AL078593.</p> <p>AA494014, AI628859, AL041352, AW002330, AL035249, AC009247, AL021757, AC006057, AL121769, AC004217, AC004134, AL050341, AC006449, AC009142, AL025284, AC002369, AC005351, AC000120, AC005206, AC005667, U80460, Z83822, AC006315, and AC002128.</p> <p>AA629699, AP000346, AP000347, AL021368, and Z79145.</p> <p>AW440928, N58862, AA613460, and Z97989.</p> <p>W39262, AI197360, and AI823657.</p> <p>Z98036.</p>
HCUGA63	679	745094	1-296	15-310	
HCUHA74	680	576850	1-434	15-448	
HCUBH30	681	850018	1-438	15-452	
HCUHC25	682	920830	1-305	15-319	
HCUHC41	683	712343	1-354	15-368	
HCUHC45	684	671212	1-354	15-368	
HCUHC69	685	693007	1-189	15-203	
HCUHD50	686	650854	1-398	15-412	
HCUHD55	687	705384	1-479	15-493	<p>AA419262, AI284640, AW238016, AI053672, AA559290, AA077776, AI536625, AA837771, AA614069, AI653886, AA365302, AW021917, AW419389, F32926, AI499938, F34728, AB26233, AI761471, AI299050, AI334443, AA167741, AA302963, AA489775, AW023111, AA526724, AA843350, AI915081, AI357823, AA652057, AA346586, R67701, AA804379, AA528500, AA973803, T80500, AW248940, AI185394, AI754291, H67172, AI561116, R91994, AL046746, AA486820, Z23147, Z61362, AC004126, AI109627, AL031255, AC006948, AC000134, U02058, AC005482, Z99755, AC006270, Z82244, AC006057, AC006125, AL1281, X54176, AL133353, AL031732, AC004526, X54181, X54178, AC006511, AL031432, I34294, AP000115, AC005317, AC002492, AC002316, AC002990, Z84476, AC005747, AC005291, AC005378, AC006070, AL035659, U89337, AL031055, Z84488, AL135744, AL031587.</p>

					AC008372, U47924, AC004820, AC004381, AL034419, AC003101, Z84484, X54177, AC003003, AL022336, AC007308, AC002463, AC006126, AC003108, AL049757, AC004134, AC005375, AL008583, AC005365, AL117258, AC006241, AC006312, AD000813, AC009181, AC008116, AL080317, AP000474, AL023803, AF001552, AF196779, AC007537, AC005581, AC004453, AL096703, AP000212, AC002418, Z83843, AL117330, AC004130, AC003568, AC006120, AL033375, AP000080, AP000152, AC007066, AC004382, AC007030, AF190465, AC002558, Z94801, AC007735, AC006137, U73634, U29953, AF178081, AC004544, AC007228, AC004518, AL096701, AC005412, AC006257, AC005512, AL022323, AC002425, AC005081, AL009610, L48038, AL022576, Z85986, AP001060, AP000289, AC005217, AC000003, AF088219, AL022316, AL035420, AC004929, AL008719, AP000110, U02531, U80017, AC004386, AL049569, AC006543, AC005839, AC005410, AC007919, AD000092, AC007707, AC003029, AC005406, AC006251, AC007387, AC007564, AL049589, AC005189, AC007731, AC005913, AC005500, AL034553, AC002119, AP000090, AC005726, U02532, AL049576, AF067844, AC004216, AC004217, AC006544, AP000552, AC002352, AL080286, Z97195, AL020993, AL031284, AC007536, AL050333, AL031733, AC008149, AL034406, AC007425, AL121769, AC004554, AF111167, AC008163, AC006552, AL033072, AL035683, AL033543, AL033521, AC006323, AC006277, AC000026, AF111169, Z82215, AL109628, AL031685, AL034420, AC007563, AL021392, AC005193, AF097738, AL049829, Z82246, Z97635, AC005003, AC007540, AC002289, U34879, AL035687, AL078462, AF019413, AL031664, U02507, AC004383, AC005598, AC004466, AC005740, AL121603, AC005255, AC004000, AL003147, AP000558, AC006965, AC007298, AL049635, L78810, AC007159, AP000049, AL049691, AL049860, AC005162, AC006275, AC004408, AC005736, AC005988, AL022318, AC002073, AL034418, AC004746, AL023655, AC009721, AL008722, AC002472, and U73023.
HCUHE23	688	675910	1 - 314	15 - 328	AA127426, AW023990, AA080866, AL031591, Z97056, AF131217, AC005512, X06053, AC004858, AC016831, AL096703, AF165147, AP001052, AC006088, AC005031, AC004084, AC005281, AC008132, AL031542, AC004999, U80017, AC005920, AF087913, AC005180, AF200465, AC005242, AC005189, AC007686, AC007537, AC005529, AL035422, AC005829, AC002477, AC008018, AC006064, AL050332, AP000049, AC008033, AC000025, AC004972, AB023049, AL035658, AC005695, AL096791, AP000555, AD000090, and AC006023.
HCUHE31	689	693311	1 - 340	15 - 354	
					AL1800436, AA746360, and AL1800456.
					AL002492.
					AL023096.
HCUHE43	690	754187	1 - 314	15 - 328	
HCUHE48	691	835917	1 - 397	15 - 411	
HCUHE76	692	666599	1 - 319	15 - 333	
HCUHF12	693	970685	1 - 543	15 - 557	
HCUHF41	694	878528	1 - 529	15 - 543	

[illegible]

HCJHM94	704	736095	I - 250	15 - 264	AC002302.
HCJH060	705	576563	I - 258	15 - 272	AP0012306, AP001193, AP000050, and AP000117.
HCJH020	706	669737	I - 384	15 - 398	AA122006, AA122007, A1733856, A1753365, A1254779, A419262, A1039187, A1017251, A4274078, A4482711, A5384489, A1634187, A1862716, A10193493, A5327209, A4503019, A4117740, A4069227, A4271069, A4610509, A4410788, A4162049, A473060, A4597179, A1029531, A4634837, A4315361, A4574442, A1250552, A4742815, A1284513, A1457313, A1912401, A1040051, A1079901, H30475, A4483606, A1079734, A1254770, A4287570, A1251284, A1251034, A1251203, A1223626, A1249853, A4652868, A570740, A4613627, H417736, T50676, A4029038, A1679413, A1380617, A1569086, A1004591, A4616599, A456961, A4582554, A4228778, A1671554, A1821044, A4255853, A4904275, A1210343, A4W067788, A45113846, A1079423, A1475611, A4904211, A1967050, A4068007, A1885572, A1908093, A1623805, A4W302048, A15642209, A1338426, A1365988, A1687206, A1653386, A1053978, A1884522, A1339850, A1570261, A10419973, A1307476, A4538366, A43168204, A4013168, A1276298, A4569706, A4W46755, A4068008, A1358229, A4166815, A4W004884, A18665580, A1732120, A1089950, A4000353, A19024534, A4007666, A4005086, U91321, A4C005291, A4C005678, A4C002126, Z82203, Z95152, A4C006211, A4P000510, A4C004895, A4C005071, A4B023048, A4C004417, A4C005531, A4C002070, A4C004099, A1034351, A4C005102, A4L117340, A1035450, A4C006312, U63721, A4C006511, A4C007193, A4C005411, I34294, A4C006314, A4C007199, A4C005484, A1109627, A4B003151, A4L031680, A4C004797, A4F109007, A4F11168, A4C007395, Z84480, A4C009247, A4C007686, A1139054, A4C005777, U82828, A1023803, A4C005837, A19196969, A4C006084, A4C00580, A4C005225, M87914, A4P000556, A4P000557, A4C005722, A4C004253, A4C005971, A4C005274, A4F085946, A4C006088, A4L049830, A4L035658, Z97054, Z85986, A4P000289, Z84466, A39972, A4C005520, A4P000042, A4P000110, A4C005736, A4C004999, A4C002312, A4C005089, A4L031281, A4C005237, A1031282, A1109865, A4P000688, A1034418, A1049749, A4C003047, A4C005081, A1121603, Z98946, Z84487, A4P000501, A1121652, A1021546, A4C004477, A4C004491, A4C004953, U95739, A1049843, A4C004890, A4C002519, A4F015160, A4C000087, A10496791, A1033392, A4C003111, A1035458, A1F134726, A1035587, A4C004517, A4C004973, S75201, A4C006947, A4C007225, A4C005015, A4F045555, A4C006538, A4C004686, A1021391, A1049874, A1022165, A4C002310, L78810, A4C005220, A19196779, A4C007351, A4C0059075, A4C004263, A1035682, A4P000694, Z98048, Z94801, A4C012627, A4C006597, A1035415, A4C005859, A4C005696, A4B001523, A4C004812, A4C005300, A4C004985, A4C004841, A1003147, A4D000813, A4C007065, A4P000037, A4C002997, A4C004804, Z85987, A4P001053, A4C006581, A4C007785, A4P000211, A4P000133, A4C005037, A4C005829, A4C006121, A4C016831, A4C007845, A4C006060, A4C002563, A4P000113, A4P000045, A4C003950, A1031685, A4C004168, A1034420, A1049776, A4C008545, A4F165926, A4C004884, A4C005775, A4F092858, Z77249, A4C007226, A4C004882, A4C005529, A1133448, U96629, A4C002565, Z98304, A4C007043, A4C004000, A4C004234, Z83845, A4P00088, A4C005363.

HCUHQ13 HCUHQ33 HCUHQ37	707	575803	1 - 352	15 - 366	AL133163, AL035422, AC002985, AC007371, AC005088, AL080242, AF001550, AC0031678, AC004032, AL023577, AC004760, AL121754, AC005940, AC006530, AC005538, AC005209, AL034451, AF075098, AP000692, AP000121, AC005318, AC007637, AL109952, AP000503, AL049766, AL009181, AC007277, AC005578, AF010238, AC004500, AL021154, AF000157, AF037338, L78833, AC018633, AC005049, AC007792, AC006449, AL049569, AF061258, AC006125, AF176815, Z99943, AL035400, AC005215, AL008582, AC003108, AC006285, AC004816, AP000555, AC005280, AL031664, AF129756, AL078477, AC005622, AC002470, AC002416, AL035703, AL031005, AC004560, AC002347, U07561, and AC006578.
	708	575800	1 - 341	15 - 355	AA460896, W72144, AA210943, N27422, AA496897, AL035413, and AL035249.
	709	850010	1 - 386	15 - 400	AL281622, T95073, H52431, AC006077, AC005412, AC005911, and AL033392, AC005736, AL031291, AC005529, AL109963, AC005049, AC005071, AC005089, AC005899, AC006111, AC005520, AC004491, AL133245, U91326, AC005015, U91323, AL023807, AC006621, AC006487, AC005295, AC008372, AC009247, AC005874, AF134471, Z93244, Z93930, AC003108, AC004938, AC002404, AC004882, AC005081, AC006312, AC003070, AP000514, AL096701, AC005255, AL049776, AP000692, AL020997, AF165926, AC005544, AC005332, AC007537, U95742, AC005399, AL096678, AL049795, AL022318, AC007205, AF196971, AC005225, AF124523, AC004814, AC006449, AC007263, AC009516, AC005088, AL109827, AC004139, AC004098, AC002429, AL049869, AC005722, AC002544, AC005527, AC006538, AC004922, AF118808, AL031311, AL035422, AL022323, L78810, AC007055, AP000952, AC007993, AL109627, AC005280, AC005881, AP000045, AP000113, AC005921, AL135744, AP000556, AP000502, AC004876, AC003109, AC005932, Z99716, AD000092, AC007226, AL031447, AC005480, AF111168, AC005694, AC007216, AC004893, AC002565, AL139054, AL031587, AP000512, AC002310, AC004596, U85195, AF134726, AP000557, L47334, AC005207, AC000353, AC007193, AC002550, and T97461.
HCUHQ74	710	765638	1 - 341	15 - 355	AW020154, AW245057, AW023511, AA365318, AL648433, W63553, AA643451, AA659200, N62666, AA559166, AA171892, AL080639, AA584756, AW029444, AA633039, H43183, AL049504, AA643441, AL628245, AA330380, AL890753, AL635819, AA230155, AW130427, AL733748, AA278496, AL732430, AL049986, AA126763, AL126811, RG3003, AL1134330, AA993198, AT753365, AJ922850, AC005701, AC005777, AC004242, AL031668, AP000113, AC003982, AL022336, AC006480, AL022324, Z83843, AC007057, AL022302, AC004386, AC007308, AC005932, Z97183, AC004382, AP000512, AF037438, AC005295, U91326, AL008639, AC002470, AL121825, AL049759, AC007192, AB023051, Z82194, AL049569, AC016027, AL020993, AP001046, AC006165, AL031276, AC005756, AC016630, Z97054, AP000354, AL022329, AC006441, U18671, AC007136, U37761, AC005874, AF134471, L34079, AF129756, AC005488, AL109801, AC006487, AC005081, Z99716, AB000660, AC006077, AC004467, AP000303, Z98941, AP000349, AC005412, AL031311, AC005529, AC002471,

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HCUHS19	711	566809	1 - 280	15 - 294	R44293, R40978, H24231, AL678013, T65857, F01849, AW177822, AW177816, AC006537, AC000353, AC006512, and U73166.
HCUHS60	712	830009	1 - 272	15 - 286	
HCUHT21	713	577265	1 - 122	15 - 136	AL207507.
HCUHT56	714	722649	1 - 447	15 - 461	AA459655, AC006125, AF196779, AC002425, AC005529, AP000511, AC005778, U96629, AL049576, AC005924, AC007688, AC009294, AL022726, AC005726, AC006538, AC004084, AL008730, AL021155, Z98036, U93305, AC004685, and Z99716.
					Z98883.
HCUHU68	715	577795	1 - 212	15 - 226	
HCUHW54	716	730716	1 - 100	15 - 114	
HCUHW59	717	739329	1 - 164	15 - 178	AW275339, and A1879909.
HCUHY49	718	577887	1 - 288	15 - 302	
HCUJA48	719	721719	1 - 470	15 - 484	
HCUJ35	720	713818	1 - 490	15 - 504	U91320.
HCUJL80	721	577172	1 - 100	15 - 114	AC005200.
HCUJM51	722	725724	1 - 441	15 - 455	AL821342, T62972, AL039515, AL820553, AW272389, AA135761, A1969090, AA197089, A1581006, AA955031, AA558488, AL889177, AA340581, AL250333, AL130787, AL130670, AL349130, AL857834, AL174827, AA525156, AA525331, AA507623, AW366198, AW008217, AL150934, AL590442, AA493546, AA809104, AL821945, AL733856, AW192518, N35135, AA398605, AL090377, AW069227, AL049504, AA714389, AL309943, AL754037, AC004893, AC004859, AC003689, AL109798, AC005484, AL096791, Z85986, AC005725, AC006539, AC005529, AC005913, AP000501, AC006241, AC005225, AL022322, AC005828,

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HCUTIN18	723	666537	1 - 273	15 - 287	
HCUT082	724	883812	1 - 323	15 - 337	
HCVAC18	725	889480	1 - 219	15 - 233	
HCWAA20	726	669991	1 - 108	15 - 122	
HCWAB01	727	921689	1 - 320	15 - 334	AW070506.
HCWAB44	728	669714	1 - 313	15 - 327	AA584207, AL031680, AC007688, AP000692, AC004910, AC005088, AC004491, AB003151, AC005071, AC005015, AL022326, AC005409, AC005081, AL020995, AP000688, AC006468, AC005768, AC009247, AL109839, AC012384, AF053356, AC005179, AP000167, AP000052, and AL031848.
HCWAB50	729	724684	1 - 139	15 - 153	

HCWAB56	730	507283	1 - 311	15 - 325	
HCWAB67	731	529658	1 - 112	15 - 126	
HCWAB80	732	959937	1 - 415	15 - 429	AA654766, AC005874, AF134471, AC005211, AC008044, AF030876, U52112, Z97054, and AF031078.
HCWAB92	733	523447	1 - 238	15 - 252	
HCWAC68	734	529653	1 - 321	15 - 335	
HCWAE16	735	660280	1 - 156	15 - 170	
HCWAE50	736	655130	1 - 211	15 - 225	
HCWAF02	737	920993	1 - 711	15 - 725	
HCWAF45	738	723452	1 - 322	15 - 336	AI271873, AA834816, AI053939, AW382603, AW021847, H72269, AA079260, R81017, R62710, T58562, AI003068, AA307623, AA523818, AA533660, AA515048, AI820857, AC003957, Z93023, AC005837, AC007182, AC005245, AC005933, AC004771, AC005914, AC005695, AC005102, AC003685, AP000497, AC004031, AC004132, AC003678, AL008582, AL109952, L78833, AL021546, AC005014, AL049776, AP000694, AL096701, AP000279, AL008722, AP000038, AP000106, AL078644, AC006484, AC007542, AC005899, AC003003, AC006581, AC007066, AC004890, AL096678, AF196779, AC006417, AC007192, AP000502, AL050333, AC007057, AL049872, AC005399, AF035249, AL021878, AF000116, AF000103, Z97056, AC003041, and AC002476.
HCWAF60	739	523354	1 - 301	15 - 315	R91062.
HCWAF80	740	529498	1 - 286	15 - 300	F02374.
HCWAG20	741	830796	1 - 299	15 - 313	
HCWAG70	742	529357	1 - 352	15 - 366	
HCWAH52	743	574929	1 - 235	15 - 249	AA812265.
HCWAIB3	744	523536	1 - 330	15 - 344	AW134548, AA649218, AF022655, and AF049105.
HCWAJ55	745	529361	1 - 68	15 - 82	
HCWAJ58	746	740987	1 - 351	15 - 365	MT7919, and AL109984.
HCWAK51	747	751640	1 - 297	15 - 311	AA837325, AI679390, AI679898, AA808982, AA971196, AA112924, AA856815, AA207147, AW408063, AI298079, Z97630, AC005921, AC006597, AP000030, AC004882, AC002477, AC005529, AP000163, AL121658, AL031602, AC004531, AC005071, AC004856, AC009516, S42653, AF109907, AB026898, AC004638, AC006449, AC005899, AC004831, AC007546, AL049697, U95742, Z86090, U52112, AL031005, AL031767, AP000501, AC007066, Z98946, AC005089, AC002527, AL034420, AC005846, AC005231, AC007216, Z81369, AC006581, AB023054, AC005696, Z84469, AC005768, U95741, AL033397, AL109628, AL109865, AC004770, AL079295, AL133238, AC005488, AC008124, AC006509, Z97876, AL031733, AC005971, AC008372, AC007055, AC005663, AC006445, AC004491, AC004019, U95740, AC007041, AC005695, AC004526, AC004851, AL022238, AC004801, AL246003, AL022327,



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HCWAK80	748	702435	1 - 470	15 - 484	
HCWAL14	749	861958	1 - 332	15 - 346	
HCWAL22	750	579046	1 - 468	15 - 482	
HCWAL39	751	861893	1 - 330	15 - 344	
HCWAM08	752	960170	1 - 95	15 - 109	
HCWAM39	753	529349	1 - 170	15 - 184	
HCWAM49	754	849980	1 - 495	15 - 509	
HCWANI17	755	966646	1 - 684	15 - 698	
AA630456, H38769, A1581223, A1003797, AL037777, H65697, AW161459, AW161879, A1191343, AA936548, A1473671, T90477, AA743968, AA299422, AA361354, A1570380, A1733856, AL047645, T94072, AA715891, A1287766, AA292719, H24953, A1054414, AW007424, AA501781, AA526424, AA577824, AA456149, A1684335, AA811150, AA54849, AA669320, AA493657, AA380781, A1866580, AA640495, A1049630, N87333, F31203, H47208, AA064978, A4678976, AA745628, A1357109, AW084100, A1308598, AW029515, A1683116, AA133013, AA714338, AA584525, A1473995, H94979, A1247101, AW022796, AF092853, AF092850, AC006160, AC005412, AC004929, AC005872, AL008636, AP000353, Z75407, AF092851, AF195658, AC002040, AC006262, Z98200, AL023513, X58139, Z54246, AC006480, AF191069, AF007563, AL121754, AC005620, A1096766, AC006530, AP000144, AC004773, AP001067, U85195, AC004990, AL031005, AC005480, AE000658, AP000313, AL034418, AC004475, AC005829, AP000194, AC006323, AL096701, AP000555, A1049569, Z84469, A1049780, AP000116, AP000050, AF196969, Z99297, AC006449, AC006650, AP000229, AP000151, AP000043, AC000017, AC005696, AC006021, AP000049, AC004851, AL034553, AC002316, AL022158, AL109952, AC005197, AP000311, AC002390, AL008718, AC007191, AL030996, AF132033, AP001068, AC003048, AC005233, AL034548, AL049779, AL035079, AC004651, AC003663, AF130343, AC002504, Z93024, AL031597, AL122023, AL121748, AL023799, AC000066, AC005231, AL035691, AL117258, A1251973, L27968, AC005544, AC004760, U52112, AL024498, Z98304, AP000010, Z85999, AL109967, AC005803, AC006251, AC004262, AB014088, AB033024, AC005037, AC002314, AC007488, D89927, AF106656, AC005178, U63630, AC005192, AL022326, AB000876, L34079, AP000506, AC002045, AB000882, AB020868, AC006241, AC003670, Z98747, AF143316, A1007204, U96629, AC007263, A1011930, AL121577, AL021939, AC005280, AC007193, AP000115, AC002375, U52111, AL049835, AC006538, AC004492, AC005820, AC004923, U02047, AC003992.					

HCWAAN55	756	928116	1 - 375	15 - 389	AC004953, Z98751, AC006088, AC005690, AL022238, AL022399, AC004819, AL021451, AC005625, AP000493, Z94161, AL121825, AC002468, AC004815, AC006130, AC004703, AL023803, S65785, AL035703, AL133035, AL021453, AL109798, AL023584, AC006529, AC006576, AL031295, AL009181, AL096801, AC005004, Z82212, AC004202, AC002425, D64108, M19508, AB009668, A012008, AL008716, AC005264, AC020663, Z99127, AP000314, AL031767, AP000502, AC007011, AL049843, Z93244, AC009438, AC008123, AP000557, AC005006, U91326, AC006359, AC002039, AC005952, X96421, AP000694, AC004539, AL035664, Z73963, M90058, AC007270, AC005196, AL078581, AC005049, U47924, AC002306, AL030998, AC004876, Z97353, AF134726, AC004841, AC002091, and AL035462.
HCWAAP63	757	523259	1 - 409	15 - 423	AL022067.
HCWAAP66	758	889439	1 - 303	15 - 317	AL216990, AL076729, AC007381, and AF109907.
HCWAAR05	759	932623	1 - 397	15 - 411	
HCWAAR63	761	523255	1 - 392	15 - 406	
HCWAAR76	762	529652	1 - 488	15 - 502	
HCWAAR84	763	529241	1 - 199	15 - 213	
HCWAAT16	764	523125	1 - 326	15 - 340	AC005820.
HCWAAT59	765	529236	1 - 339	15 - 353	
HCWAU26	766	849902	1 - 263	15 - 277	
HCWAU89	767	589836	1 - 333	15 - 347	
HCWAUV75	768	849976	1 - 396	15 - 410	
HCWA V41	769	542388	1 - 336	15 - 350	
HCWAZ16	770	529227	1 - 328	15 - 342	
HCWAZ43	771	849892	1 - 496	15 - 510	
HCWAZ66	772	523243	1 - 434	15 - 448	
HCWAZ73	773	523299	1 - 284	15 - 298	AL720968.
HCWAZ91	774	529226	1 - 443	15 - 457	
HCWBA18	775	529224	1 - 179	15 - 193	
HCWBA21	776	937631	1 - 394	15 - 408	TS91632, and TS93900.
HCWBA49	777	723359	1 - 327	15 - 341	AL695904, AL652833, and AC005576.
HCWBA50	778	835532	1 - 326	15 - 340	
HCWBA55	779	529222	1 - 296	15 - 310	
HCWBA64	780	715579	1 - 265	15 - 279	
HCWBB27	781	967045	1 - 392	15 - 406	AL709174, AL932902, AA078084, AW194802, H54292, AA085863, AL889612, AL623423, AW236342, AL268812, AA563770, AA573189, AA252763, AL824562, AA526779, AA669816,

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			15 - 222	
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HCWB63	782	667283	1 - 332	
HCWB616	783	529350	1 - 208	
HCWB628	784	584778	1 - 341	
HCWB632	785	574909	1 - 361	
HCWB634	786	573188	1 - 331	
HCWB61	787	728666	1 - 313	

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HCWBC69	788	849971	1 - 290	15 - 304	
HCWBC71	789	784052	1 - 69	15 - 83	AA827967, and Z91783.
HCWBC81	790	849974	1 - 248	15 - 262	
HCWBD54	791	706513	1 - 238	15 - 252	
HCWBE25	792	529216	1 - 127	15 - 141	AF150169, and AF111167.
HCWBE37	793	542403	1 - 307	15 - 321	Z54343, and AL109760.
HCWBE49	794	932196	1 - 406	15 - 420	
HCWBE51	795	782317	1 - 418	15 - 432	
HCWBE58	796	773587	1 - 161	15 - 175	
HCWBE69	797	723717	1 - 435	15 - 449	W45011, AL191804, AA773406, AA361071, AW402184, AA853510, AA314671, AW401537, AA345752, AA378756, AA346880, AA367230, AW405965, T80869, T72713, N23610, R19889, R94160, N55688, Z43415, R18379, W21269, AW403145, W19964, AA325636, AW401713, N57425, AA313360, N57316, W46199, AA6070088, AA313277, AW160492, AW247594,

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HCWBE71	798	688011	1 - 393	15 - 407	AI440268, AA523203, AA523204, AI114755, AI160875, AA506952, AW019964, AW265274, AA368329, AI609972, AI753536, AI635677, AI690335, AA807704, AL047480, H40478, AW237905, AA551204, AA837771, AW029626, AI749306, AI888050, AL048002, AA351868, AI982994, AW341955, AI114645, AW263867, AI041895, AI453160, AI564294, AA831997, AA632765, AW471467, H87766, AA629939, AI348780, H43183, AI799421, N45056, AI042373, AI169469, AA320521, AA653291, AI378437, AI118998, AI750692, AA634543, AA683069, AA604797, AI800345, AA642289, AA207147, AI345394, AW023376, AA788904, W27084, N22501, AI671077, AI929298, AI929825, H15241, AA670108, AA741301, AW007424, AA225100, AW157180, AA827383, AI537480, W96522, AI915068, AI114543, AW197926, AC004686, AC004242, AL031662, AC006312, AC005355, AC005189, AC005081, AL021917, AC005338, AC005736, AB023051, AP000512, Z83826, AP000501, AC007510, Z84481, AC007363, Z83838, AC007488, AC007225, AL079295, AI139054, U13674, U96629, AP000125, AC006549, AC005821, Z93023, AL031286, AL117694, Z82244, L13176, L77570, AF024534, AP000252, AP000098, AF064866, AC005969, AC005899, AC007285, AC005212, AP000515, AL133289, Z97832, AP000212, AP000134, AC002395, AC005772, AC005231, AC005183, AL007151, AC012384, AC002302, AC005911, AP000031, AF031078, AI136297, AC005940, AP000558, AC004253, AF029308, Z98036, AC005086, Z85996, AC004596, AF030876, Z98941, AC007688, AC005952, AL117391, AC005778, AC002347, AI246003, AC006070, AC005412, Z79997, AP001053, AL035405, AL035587, AC005972, AC004030, AC007387, Z97352, AL022336, AC004913, Z97053, AL078611, AC005902, AL049872, AC004531, AC004973, AC004813, AC005670, AL109984, U29953, Z97184, AL031284, AC002563, AP000014, AP006992, AF113694, AL117344, AC005839, L78810, Z98743, AC004779, AL031686, U55184, AL109628, AP000172, U62631, AF050154, AC012085, AP000057, AP000355, AC007617, AC007226, AL031311, AC006211, AL049692, AL008718, AC002400, AC005271, AP000502, AC005529, AC005358, AC002527, Z81369, Z95115, AC007025, AC005632, AC002425, AF111167, AC002350, AC006120, AL031985, Z98256, U91318, AL049631, AC000994, Z84484, AL022318, Z99716, AF053356, U43572, AC004912, AC007455, AC006111, AL121652, AL035681, AC000097, AL034451, AP000553, AL049845, AL009172, AC005181, AC006547, AC005218, AL035398, AC004611, AC005565, AL021391, AL022238, AC020663, AL035685, Z84483, AC004999, AC004967, AC002984, AF129756, AC003070, AL031123, AB014085, AC004187, AL031282, AC006571, AC003972, Z83844, AL050348, AL121603, AC007091.
HCWBE76	799	968515	1 - 158	15 - 172	
HCWBG06	800	954670	1 - 60	15 - 74	
HCWBG30	801	920530	1 - 289	15 - 303	

HCWBG40	802	676588	1 - 540	15 - 554	AC002565, Y18000, AL0009175, AC005049, AL031432, AL031003, AC0009516, AL031276, AL096761, AC005095, AC004662, AD000092, AL049588, AC002045, AC002082, AL035610, AL023803, U80017, AC0007731, AC0007358, AL096775, AL096774, AC000118, Z98304, AC005031, AL109623, AL050341, AC005500, Z99943, AC004876, M84472, AL021546, AL13245, AC004834, AF106656, AL031846, AC004149, AL022719, AC003957, AL034553, and AP000331.
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HCWBH77	805	529229	1 - 279	15 - 293	AA528467, AI865264, and AI267855.
HCWBH91	806	789318	1 - 118	15 - 132	AC002316.
HCWBH17	807	954153	1 - 171	15 - 185	
HCWBH24	808	529211	1 - 112	15 - 126	
HCWBH37	809	967717	1 - 335	15 - 349	
HCWBH53	810	934909	1 - 375	15 - 389	
HCWBH77	811	529238	1 - 217	15 - 231	
HCWBH90	812	921653	1 - 342	15 - 356	
HCWBH02	813	917300	1 - 408	15 - 422	
HCWBH27	814	784524	1 - 128	15 - 142	
HCWBH61	815	849967	1 - 320	15 - 334	
HCWBH66	816	529228	1 - 87	15 - 101	
HCWBH75	817	935579	1 - 470	15 - 484	AL022328.
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HCWB181 818	849977	1 - 165		15 - 179
HCWB186 819	719521	1 - 380		15 - 304
HCWB138 820	935481	1 - 336		15 - 350

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HCWBL41	821	660457	1 - 372	15 - 386	R20206, T82390, T48770, AL039515, W07542, AA757646, N54937, H82873, AA847341, AA525156, AF191408, AL791720, AL049999, U91323, AC007546, AC005354, Z98946, AC004983, Z84474, AC006344, AB001523, AL031311, AC006354, AP001054, U70065, AC005696, AC002492, AC004771, AC003006, Z84480, AC006464, AL035086, AP001052, AC004914, AC007421, AF053356, AC004825, AL031577, AC005089, AL031587, AP007876, AC006512, U91327, Z61071, AC005529, AC005839, AC004797, AC002077, U78027, Z85987, AF165926, AC005288, AC004383, AC006332, AP000133, AP000211, Z86090, AF196972, AC004692, AC004674, AL049776, AL035422, AL049795, AC004883, AL008731, Z97987, AC004967, AC005746, AF023268, AC005372, U45945, M81181, AC004638, Z82190, AC005527, and AL133448.
HCWBM04	822	861842	1 - 329	15 - 343	AC002464, Z85999, AF002223, AP000033, AC004253, AP000102, AP000260, and Z97196.
HCWBM50	823	577712	1 - 347	15 - 361	
HCWBM95	824	849932	1 - 386	15 - 400	
HCWBN06	825	924638	1 - 360	15 - 374	
HCWBO10	826	842038	1 - 331	15 - 345	
HCWBO23	827	964590	1 - 165	15 - 179	AC007130.
HCWBO94	828	574861	1 - 361	15 - 375	AC007162, and AC005212.
HCWBP27	829	684336	1 - 317	15 - 331	AF205588, and AL024498.
HCWBP56	830	733662	1 - 303	15 - 317	AW022796, AA847341, AW023390, AL308529, AL554399, AW029626, AL188050, AL119063, AL307563, AL520925, AL475294, AA358531, AA496041, AA935827, AA687084, AL076729, AA419014, AL002863, AL446574, AL067012, AL571804, AA661554, AL798521, AL571094, AW070901, AL860648, AA084320, AA525156, AA768179, AW129188, AA632355, AL752977, AA218684, AA3581317, AL049680, AA446931, AL196994, AL805699, AA34891, AL805373, H05066, AA761454, AL171400, H24331, T52366, AW338376, AL805556, AL890297, AA419107, AW131109, AW190437, AL734076, AL732102, AL732101, H23238, AL734075, AA828840, AA551548, AL445338, AL572680, AA749196, AL124558, T07943, AA772818, AL802268, AA873661, AA484191, AA524846, N55076, AA832108, AL003086, N59248, AA436949, AL343808, AL149177, W27084, AL570067, R79396, AA496042, AL363336, AA428991, AL000314, AL361401, AL174827, AL020777, AL114645, AA385652, AW362702, AL207534, AL668566, AL921744, AA513916, AA420703, AA225566, AA225494, AL446618, AA632556, AL434103,

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HCWB74	832	765881	1 - 319	15 - 333	R59942, AC002301, AP000045, AP000113, AC005399, AC007327, AP000510, Z84469, AC004520, AL13163, AL035079, AC006163, AC004032, AB023048, AL013131, AC003030, AC005081, AC006461, AC004938, AC005015, AC003010, and L44140 AA564671, AC002045, AC002039, AC002544, and U91326
HCWBK5	833	849969	1 - 365	15 - 379	
HCWB003	834	920886	1 - 330	15 - 344	
HCWB036	835	557873	1 - 324	15 - 338	
HCWB070	836	706526	1 - 373	15 - 387	
HCWBQ74	837	526537	1 - 356	15 - 370	AW242031, AW340905, AL039309, AL446336, AA018923, R33091, AA224525, H40324, AA012829, AL042310, AW029251, N30205, AA689351, H56703, AW440368, N41775, AA825185, AL679221, AA827096, AA69826, AL07565, AL271762, AC004814, AL049653, U91326, AC004777, AF047825, AC005231, AC006236, L78810, AC004000, AC007435, AL049569, AC005332, Z85987, AC002996, Z84480, AL133245, AL022333, AC005519, AC000501, Z98742, Z97630, AL022163, AC002312, AC005527, Z98941, AC004216, AC002470, AL022313, AC009516, AL080243, AC005031, AC004686, Z85986, AL020993, AP000116, AL031284, AC006057, AC004832, AL031666, AC005180, AP000512, Z97196, AC003101, AL136295, AC005520, AL033392, AC006480, Z98304, AC005015, AC005745, AC006344, AL022721, AC004890, AC002365, AL023375, AL109839, AC009946, AC004019, AL031680, AC003950, D86995, AF207530, AF045555, AC005844, AC006285, AC006530, AC005529, AC006468, AC020663, AC003108, AC005921, AL117344, AC005037, AC007225, AF053356, Z98743, AC005207, AL121652, AL003147, AP000558, AC007216, AC005086, AD000092, AC004884, AP000117, AC004854, U96629, AC004841, AL021392, AP000050, AC006211, Z86990, U29953, AC005944, AC007666, Z84487, AC007308, AC005300, AC005102, Z93241, AP000555, AC007421, AC008372, AC004752, AC007277, AF196969, AC005412, AC005399, AC005081, AL022316, AC008044, U62292, AL109657, AC004882, AC006111, AC002477, AF111168, AC005512, AC002301, L47234, AL132712, AC005071, AF196971, AL035086, AC004491, AC005702, AC002544, AL096701, AC006538, AC007993, AC006905, AC004659, AC005695, AC006965, AC004492, AC005619, Z97183, AF205588, AC000134, AC007283, AL049843, U52112, AC004447, U91321, AC007546, AL109963, AL139054, AL117330, AF003626, AL021154, AL035659, AC005747, AC005225, AC005924, AL022165, AL049759, AC004859, AC005409, AL122020, AC004985, AC003982, AP000556, Z95114, AL035587, AC002375, AC005274, AC005089, AC005725, AL049694, AC007687, AC004099, AC005058, AP000690, Z83844, Z99755, AP000689, AF015416, U91322, Z99128, AC003041, AC002316, AC004878, AL021391, AC006257, AC003098, AL049780, AC005082, AL022311, AC006487, AL096791, AL009181, AC007226, AF165926, AC005914, AC003009, AL050308, AC002072, AP000952, AL024474, AC005778, AL246003, AC002314, AC004638, AL034417, AC007774, AL031007, AL121638, AC005046, AL133371, AC0050971, AC003042, AL050318, AC004887, AL021878, AP000300, U34879, AC004552, Z98752, AC007055,

HCWB088	838	527694	1 - 310	15 - 324	AC004167, and AF196779.
HCWB086	839	527692	1 - 424	15 - 438	AA234213, AL078621, and Y13478.
HCWB089	840	967726	1 - 401	15 - 415	
HCWB086	841	574850	1 - 120	15 - 134	AA912663.
HCWB087	842	842037	1 - 370	15 - 384	AL281474, AL187148, AL050076, D44899, AA446645, AL609972, AA653139, AA584765, AL024067, AA342238, AA526643, AA598738, AA805029, F24745, AA450149, AA568314, AA193205, AL090334, H28545, AL158542, AA302661, AA648605, AA570041, AA482938, T71936, AW083706, AA225630, AA808998, AA383937, AL494417, AW193189, AA847099, AL119010, AA112924, AA020788, F30650, AL283938, AA443727, AA425924, AL154333, AL134278, AW167330, AW051288, AL166555, H25302, H67064, AL620415, AL858889, AA525407, AL636734, N73060, AA664126, AL955873, X69907, AC0048913, AF000501, AP000103, AC004106, AL031281, AL035405, AC005089, AL049694, Z99128, Z97056, AP000269, AP000555, AC007435, AC004217, AC008126, AC003041, AC006965, AL035638, AF049895, AF111168, Z82244, AL049830, AF002223, AL031905, S42653, AL035458, AC004985, AL031432, AC007993, AC004526, AL033527, AL022336, AC004843, AL035079, AC004805, AC005755, AL034549, AL139165, AC002565, AF047825, AC005261, AF196969, AP007685, Z95152, AC006966, AL031685, AL079295, Z83309, AL009172, AL031389, AC005913, AC005535, AL031673, AL049872, AL033518, AC005874, AF134471, AC005479, L78810, AC005828, AL078638, AC005924, AC005372, AB023048, AC004859, AC006026, AF207550, AC005901, AE000638, AC004491, AC002477, AC005632, AC007108, Z93017, AL049591, AP000300, AC006121, AL008718, AF134726, AC005933, AL096701, Z81369, AL096766, AP000032, AP000113, AP000045, AC003956, AC007225, Z99716, Z82190, AC005921, L05367, AC007358, AC002073, AL031777, AC006001, AL035659, AC007298, AC008064, AC004148, AL031657, AC002470, AC006023, AC005916, AC004973, AC007216, AL133246, AC005231, AL049569, AL050348, AC005881, AC002994, AC004584, AL031120, AC006487, AC005531, AC007386, AC002314, AC006449, AC005520, AP000040, AC003982, AL022328, Z94056, AC002425, AC005233, AC002045, AL031291, U95743, AL031289, D87675, AC004522, AC005082, AC004531, AC004841, AC004821, AC004884, AL034129, D87675, AL008730, AP000355, AC007192, AC005328, AL035530, U85195, AC006344, AC006146, AC006239, AC005914, AL034371, AC020663, AL109801, AC007276, AC006088, AC005740, AC006050, AL080243, AC003071, AL022316, AC005971, AC000353, AC000670, Z94801, AC007327, AC004024, AC007237, AL035071, U91336, AC004983, AC005821, AC010205, AC005696, AC005014, AL133243, AC004223, AL022323, Z83838, AC000159, AL022322, AL010770, AC006960, AL049776, AL049636, AC005730, AL109984, AL050307, AC006241, AC002350, AC006505, AC004762, AL121934, AC005220, AC002347, AL009181, AL049589, U91318, Z84469, AC006581, AC005015, AC006509, AC006299, AL024507, L34294, U95741,

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HCWBS96	843	954028	1 - 404	15 - 478	
HCWBT10	844	523249	1 - 340	15 - 354	
HCWBT31	845	720016	1 - 283	15 - 297	AA897291.
HCWBT48	846	527676	1 - 139	15 - 153	
HCWBT86	847	927506	1 - 316	15 - 330	
HCWBU09	848	527562	1 - 279	15 - 293	
HCWBU24	849	861864	1 - 371	15 - 385	
HCWBU49	850	850014	1 - 402	15 - 416	AL118817, AA425283, AL360368, N27737, AL224583, N62478, AF567976, AL464624, AA493464, AF753131, AA506544, AW085751, AW270287, AA659303, AA330435, AL119123, AL155572, AA595661, AL048969, AL690379, AA515165, AW169183, AL310670, AL754064, AW409621, AL349130, AA372958, AL038990, AA524604, AW086015, AA489390, AL042731, AA382435, AA662982, AL751698, AL134338, AA631915, AL744890, AL540319, AL044438, AA862218, AL039436, AA630476, AL935827, AA640305, AL042336, R43468, AL044458, AA68942, AA280886, AL014872, H05742, AL439525, AA181705, AW084152, AL174703, AA720594, N73337, AA369494, AA167178, AF114095, AW275788, AA303588, AD000092, AC002433, AC005081, AC004477, AL031228, AL021391, AL096791, AC005048, AC005516, AC005004, AF129756, Z97056, AP000359, AL035422, AF217403, AC005664, AC006479, Z82208, AL035420, AC005546, AC009336, AC006547, AL133448, Z82244, AC004686, U78027, AL022313, AC007057, AL049872, AC006581, AL021393, AP000505, AC007021, L78810, AC007242, AC002551, AL035413, AL035682, AL139054, AL121769, AC004099, AF195658, AC005301, AC003969, AC007055, AC007686, AL049709, AL035603, AC007093, AC000007, AL031122, AC003828, Z98048, AC002476, AC005726, AC007397, AC004000, AL136295, AC005519, AC002985, AC000075, AL049539, AC004772, AB014079, AL031587, AP000514, AC007535, U91318, L44140, AP000133, AP000211, U91325, AL078639, AC005670, AP000961, AC006530, AC002126, AC004159, AC004921, Z79488, AC003109, AC007436, AC005907, U47924, AP000140, AL078581, AC003042, AC005391, AC003821, AC012330, Z93017, AC004805, AC004802, AP000280, Z15025, AC005808, U71148, U91327, AC004998, AL008718, AC004973, AL122020, U91326, Z84466, AF111168, AL022476, AL049780, AP000088, AF015416, AC006511, AL078471, AP000107, AP000039, AL133312, AL034395, Z84497, AC007546, AF030876, AC009946, AC005082, AL021308, Z93244, AC005261, AC007993, AL132799, AC010077, AL031774, AL031282, AC005751, AC005694, AF196779, L78833, AL024507, U73647, AC004929, AL096763, AC005215, AL050323, AL035494, AP000124, AP000056, AP000171, AC004522, AC005089, Y14768, AC003102, AC007785,

HCWBUT72 HCWBVT09	851	668350	1 - 540	15 - 554	AL133382, AL031259, AL008710, AC003077, AL121657, AC005011, AL133544, AL035419, AL031680, AC005057, AC005911, AC005412, AF141308, AC005839, AC005793, AL117694, AC006468, AL021937, AC004903, AP000114, AP000046, AL022326, AC006139, AL1008726, U80459, AL035460, AL133245, AL049776, AL034548, Z83847, U85195, AC005323, AL034379, AL023281, AC004213, Z86061, AL022723, AC004671, AF001550, AC005736, AC006255, AP000210, AP000132, AC002039, AC005335, AC007227, D88271, AC005369, AE000658, AL034417, AL031845, AF000228, D87022, and AL132987.
	852	746335	1 - 366	15 - 380	AL042853, AA503947, AA349854, F33121, AA366035, AA369477, AA318652, AA513999, AA508509, AA846981, AA341228, F19258, AA657458, F29989, W07032, AA559290, AA483034, AA724230, AE284583, AL158229, AA558697, N66067, AA310158, AA878495, AA363501, AA662974, AA515435, AL165988, AW406755, AL1921188, AA371368, AA371503, AA723017, T66105, AW193546, AW339687, F36373, AA658235, AA557879, AL635272, F26152, AA780929, F36273, AA737154, AL120502, T07346, AA683037, AW270270, H58672, AA828680, T40077, AA828826, AA747620, AW008317, AL866908, R40625, AL457397, AL432713, AA580889, AL137954, AL357288, N41759, AL036854, AA092739, F24284, AA345333, H77900, AA932099, AA618002, C05986, AL079843, AL118911, C17838, AL745325, AL623898, AL246119, AA626747, AL431688, AA065087, R44592, AA301813, AL1565245, AA662017, AW089789, AA313016, AL037554, AL439360, AA372106, AA654322, AA148489, AL284640, AL688928, AA159978, R13151, AA639270, T25706, AW193295, AW138086, AL041382, AL955323, T29180, AL624698, AA339187, AL792864, AL18620, Z97053, AP001053, AC007285, AL022717, AL021918, AL121934, AC005632, AL121658, AL031736, AC007536, AL109799, AL0409757, AC005215, AL023318, AP000034, AP000101, AL008629, AL034548, AC005803, AL133312, AC004740, AP000301, AP000045, AP000113, AL035413, AC004010, AL078602, AF0139906, AL117328, AF055066, Z87182, AL121603, Z75890, L78833, AP000141, AP000089, AC004884, AC004066, AP000264, AL035684, AC008115, AL023281, AC005180, AC007283, AC007312, AL021939, AP002049, AC004600, AC000353, AL020993, AC004890, AC004712, AC007733, Z77531, D87675, AP000512, AC006049, AC005015, AL109984, AP000692, S78429, L44140, AP000031, AC005856, AC002377, U47924, AC004496, AC006499, AC005722, AC004470, AL031664, AL022394, AC008109, AL023803, AC004259, AC007461, AP000230, D83737, AP000144, AL008636, Y10196, AC006965, AC008984, U82668, AL049776, AL109939, AP000555, U96409, AL031650, AL190465, M87918, AL109907, AC004941, AC005911, AP000431, AL035448, AC004797, AC002485, AC006312, AC005399, AF108083, U95740, Z98950, AP000352, AP000252, AP000350, AC002316, AL035414, AC007848, AL109628, AC007666, AC004019, AC005625, AC005324, AC005944, AC005081, AC005879, AC0020663, AC005696, AL121915, AL035415, Z99756, AC000052, AC002996, AC0066071, U75931, AC004466, AL049874, AC005225, AL035461, AC005251, AL049872, AC005332, AL110292.

HCWBV51	853	725889	1 - 315	15 - 329	<p> Z98742, AC006552, AC016026, AC006285, AC004087, AC000067, AC005355, AC005799, AC005486, AB023051, AL133448, Z84718, AF067844, AC005184, AC004542, AC004477, AC012085, AC005998, AC016025, Z82185, AC006088, AC005208, AF044083, AL049829, AC005204, AC007226, DI16583, U66059, AC004913, AP000134, AP000012, AC004020, AL031591, AP000194, AL035464, AC007537, AL079305, AL008582, AL080243, AL033376, AC000085, AC002558, AP000048, AC005703, AC005071, AC005370, AC000120, AL031733, U18400, M37551, L47234, AL035455, AL021786, AP000088, AC006077, AL122992, AL031283, AC004834, AC005212, AC004933, AC004703, AC002349, Z82244, AP000351, Z86062, AP000556, AP000557, AC007563, AC004902, AC005231, AL049712, AP000553, AC006149, and AF11168. </p> <p> F00252, AL134669, AW328050, AL500151, M77984, AL590442, AA533653, AA094109, AA298531, AB32674, AA601376, AB21892, AA380324, AL355414, AA040519, H53109, AW029299, AA655026, AA693484, AL053673, AA601908, H86105, AA621838, N23229, C14262, AL133668, AL1818067, AC006023, AC006312, AC005049, AL080243, AC012384, AL078638, AL049829, AL023575, AC005081, AC004854, AC005363, AL049539, AL034420, AC005740, AC006285, AL049759, AL133246, AC007546, AL135744, AC004841, Z83846, AC005914, Z93023, AL031670, AC010206, AC007686, AC005180, AL133163, AL024498, U07563, AL049553, AC005736, AC002565, AP000114, AP000046, U80017, AC005697, AC003982, AC005759, AC005822, AF165926, AF196779, AL049636, AC003663, Z82176, AC002395, AC006453, U95090, AC002394, AC006071, AC005730, AC005004, Z84469, AL031591, AC005703, AC003104, AF109907, AC004659, AC004125, AC005082, AC005328, L78833, AL031848, AC006241, AC007842, U91326, AC010205, AP000697, AC005231, L022165, AC003101, AL034379, AF129756, AC004383, Z95113, AC002310, Z93241, AC002306, AC005015, AL008718, AC005005, AP000248, AC004655, AC005512, AC004966, AC005846, AC005971, AC007277, AC004148, AC005821, AF053356, AC002350, AC016027, AC004019, AC004999, AC005829, AC005399, Z95331, AL021391, AL031427, AP000032, AL096791, AC004821, Z82184, AC004656, AL021917, U47934, AB003151, AC004686, AC007312, AC005722, AC002091, AC005746, AC002558, AF111169, AC007055, AC009247, AC005491, D87675, AC002544, Z75887, AC008044, AL050321, AC004032, AF047825, AC005409, AL021578, AC007690, U95742, AC004477, AC004167, AC004859, AL049776, AC005632, Z98200, AC002425, AL109758, AC004765, AC004526, AC004967, AL022312, AC005531, AC002347, AC005696, AC007057, AC000082, AL031287, AC005592, AC004858, AP000010, AC006275, AC004883, AC006480, AC007052, AL080245, AC007731, AL139154, AC016830, AC005332, AC005288, AC004253, AC004797, AC007666, AL008582, Z85986, Z93020, AL246003, AP000553, AL080242, AC005500, AC005529, Z84476, AC004914, AC007225, AL031311, AP000555, AC005189, AC002316, AL022336, AC006130, AC005057, AP000089, AC002476, AC004813, AC005482, AC006538, AL022353, Z84480, AC005922, </p>
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HCWBV96	854	796584	1 - 396	15 - 410	AA554392, and AA372426.
HCWBX63	855	527081	1 - 117	15 - 131	AW104748, AA2280632, AA655004, R67365, W85752, AA557970, R95704, H05073, AA552726, T78484, AA806734, AA515051, AA461317, AA509743, R84309, AA60497, AA633266, AA774184, AA158328, R84303, R83929, H02135, W80462, AA160481, N40815, R69255, AA084337, AA130658, AA196796, R52163, AA720548, H80357, H73704, H68680, H02877, T94075, H64778, AA620464, H48636, W56203, R50087, AA483223, N71724, N57890, W16581, R92288, AA158301, AA171416, AA578251, AA858197, R66878, R84296, AA161083, R47822, R93576, W95939, AL191227, N87661, AA628602, AA721981, N20219, AA522942, AA810370, AA679009, AA602528, H80373, H80186, N53573, AA938225, AA190895, N70442, AA584751, AA159974, T49241, T71030, AA469021, AA601499, AA578017, AA020729, AA047296, AA66634, AA558616, AA112299, R32415, R41717, H79297, AA342914, AA644538, AA650271, R97634, AA527958, AA583394, AA634145, T53128, R91159, AA639248, R67504, T97558, AA521355, AA864983, AA126777, AA574110, H68999, H79151, AA773176, AA167643, AA664015, AA204718, AA721599, AA335972, R89511, AA224129, H11124, H49061, AA169194, W74484, T16056, AA459379, AA173071, AA824654, H08496, N25296, AA382911, AA873560, AA524838, AL133723, T92445, AA137017, F10924, AA663486, AA693484, AW402067, AA205915, H64805, AA226153, AA1199616, AL035604, AC005900, AC000355, Z84718, AL035416, AP000351, AC004067, AC004804, AL033521, AL006096, AL022165, Z97876, AC010072, AC003029, Z98304, AL066770, AP001170, AC006039, AC003024, Z92543, AC007406, AP001068, AC004531, Z83313, AC005162, AC007050, AC005535, AL031294, AC004949, AF146191, AC005823, AC006946, AC007751, Z73361, AL034451, AL132766, Z84487, AL011930, AC007341, AC002454, AL035695, AL035415, AL109733, AP000049, Z99716, AP000352, Z98950, AL136363, AC008064, AC004626, AC004453, AP000354, AP000311, AP000355, AC005327, AC004051, Z84467, AC006026, AC003686, AC007842, AL022097, AL121823, AC002488, Z86061, AC008179, AL008710, AC002412, AL006998, AB006659, AL049554, AC007252, AL132985, AL078477, AC005541, Z84719, AL031904, AC006975, AC004996, AC004158, Z95118, AC007993, AC006369, AP000949, AC006115, AF047825, AP000515, AL035252, AL049844, AL049550, AL122023, AC005737, AL049838, AC004024, AC004451, AC004140, AC007277, AC006120, AC007065, AC005597, AL035422, AC003082, AC006031, AC004059, AC002449, AL078621, AL109854, AC006532, AL022069, AC000047, AL031446, AC0013973, AL096862, AB019437, Z82205, AL121892, Z98235, AC006994, AC009225, AL118497, Z82205, AC009288, Z84470, AC004842, AL121892, Z98235, AC006994, AC009225, AL118497, Z82205, AC009288, Z84470, AC004842.
HCWBX65	856	970694	1 - 164	15 - 178	

HCWBX67	857	506730	1 - 508	15 - 522	AC003692, AC006397, AF000552, AC006152, AC010849, AL117351, AC004057, AC006984, AC004385, AP000023, AP000506, AC005342, Y10196, AC005871, Z81365, AL008709, AL080239, AC007363, AL031654, AC002403, AC007533, AC005333, AC007159, AL109656, AL050308, AF064866, AC004208, AC004081, AC005393, AL049565, AC006062, AL033397, AP000014, Z98051, AC002430, AC007617, AC006213, AF064862, AL021997, AC006227, AF064865, AC002524, AC005962, AC006071, AC009514, AC007384, AC002429, AF050666, AC004988, AB000882, AC004761, AC005768, AC004467, AC004459, U91323, AF104343, AC005516, AC018633, AC006487, AL109758, Z98941, AC006288, AC004830, Z98172, AC000100, AC006195, AC010349, AC002499, AL031012, AL022322, AC002056, AC005863, AL024497, AC004629, AC002381, AC004745, AC006270, Z94055, AL109753, and AC004889.
HCWBX67	858	767491	1 - 121	15 - 135	
HCWBZ78	859	706521	1 - 473	15 - 487	AL050322.
HCWCA51	860	849923	1 - 499	15 - 513	AC002395.
HCWCB37	861	527683	1 - 399	15 - 413	AF150189, AF150193, and AF150184.
HCWCB80	862	529234	1 - 210	15 - 224	
HCWCB89	863	542340	1 - 175	15 - 189	
HCWCC62	864	967306	1 - 386	15 - 400	
HCWCC77	865	527077	1 - 278	15 - 292	
HCWCC82	866	705347	1 - 393	15 - 407	
HCWCE02	867	849968	1 - 312	15 - 326	AL266137, AA446645, AA364006, AA689351, AW419126, AA365520, AA642464, AA221999, AA502207, AA526099, AW192199, H62778, AA805848, AA493464, AA525807, AL885896, AA603323, T67090, AA487209, AL272052, AA971196, W45205, AA228368, AA593471, H81270, AA527633, AA584655, AA485482, AA468505, F13749, AA468371, AA715173, AA715075, AA581895, H15241, AA302763, AA084609, AW028376, F25301, AA824484, AA552809, AL245693, AW089952, AL272211, AA630947, AW188742, AA296614, T65951, H91047, AA583728, S42653, AC004408, AC007136, M87914, AC005859, AC009247, AL135744, AL133353, AL022336, AC004686, AL121915, AP000088, AC004106, AC005049, AC005209, Z86090, AF207550, AC005229, AC002045, AC004975, AC004106, AF196972, AC002044, AC007450, AL049760, AC005484, AP000066, AC006130, AC004999, AC007880, AL1522316, AC009516, Z85996, AL096776, AF111168, AC000353, U91321, AC004125, AL031659, AC004797, AL031589, AC006630, AL096791, U80017, AC006026, Z82217, AC002350, AF047825, AC005180, AC008033, AC005324, AP000096, Z94277, AF165926, AC003687, AC005006, D87675, AC004832, AP000252, AC002375, Z95152, AL049872, AP001053, AL035420, U91322, AF134726, AC007845, AC005619, Z84469, AC004673, AC003025, AC004491, AC006014, AL009173, AC002476, AC004813, AC000052, AC005412, AL035400, AC005971, AC007546, AL031681, AC006323, AL035638, Z94801, AC007226, AC004148,

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HCWCE21	868	523224	1 - 540	15 - 554	AA131704
HCWCE35	869	706489	1 - 289	15 - 303	AW440424, N55515, A1025905, A1285493, A1683426, AL133906, AL133902, AA834670, AH446623, T70299, AC004983, AL035608, AC003800, AC006650, AF165926, AL031282, AF109907, AP000152, AC005354, X74984, AC004922, AF052051, AL1049830, AF146367, AC003042, AF124523, AC005291, AJ003147, U82668, AC006124, AC004890, AC002306, AC005288, AP000300, AP000549, AC006946, AL031666, AC005221, AC006197, AC004874, AP000113, and AP000045.
HCWCE63	870	527678	1 - 244	15 - 258	T96277, T96279, and AP000555.
HCWCE69	871	757800	1 - 284	15 - 298	AL884861, N63755, AA3386433, A1018726, A1624038, A1246061, AA341865, H71678, R48980, AW192648, AA317414, H81732, AA679353, AW088557, AA662614, AA054639, AV0408396, H86579, AA063115, AA730488, AA371883, AA538404, A136722, A1054900, AV069769, AA486877, W94450, N30205, A1360504, AA0985199, AA077637, W42387, AA018923, A1249853, AA012829, A1284543, R87646, A1254770, A1251044, A1251034, A1251284, R33091, A1250552, A1904944, AA303131, AA809011, AA206366, AP926597, R56810, A1459866, AA302660, H52197, AA304790, H53023, A1537800, H61871, AA774006, R19199, AA192731, H90032, A1251241, AL037006, W68328, H65213, A1223626, AW019964, AW303409, AA744095, H07953, T02817, AW265688, F23307, AA295893, AP003404, AA295899, A1369076, AA734741,

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HCWCE86	873	964648	1 - 389	15 - 403	AC005587, AL031283, AC005528, AC004972, AC004821, AH020863, AC007392, AC000111, AC005231, AL079305, AL133004, AL078471, AP000432, AL021393, Z86690, AC007031, AL008718, AC002312, AC0008134, L35532, AC005529, AC004764, AC005006, Z84719, AC004448, and AL034551.
					AF070717, AF049895, AC002425, AL078644, AC004386, AC000353, AC004007, AC007192, AC002400, AC006064, AC002299, AC008067, and AC005756.
HCWCE04	874	615626	1 - 39	15 - 53	
HCWCE06	875	954580	1 - 204	15 - 218	
HCWCE91	876	527558	1 - 335	15 - 349	
HCWCE94	877	952684	1 - 536	15 - 550	
HCWCE93	878	527090	1 - 609	15 - 623	
HCWCE62	879	575336	1 - 320	15 - 334	
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HCWC101	880	920706	1 - 279	15 - 293	
HCWC122	881	675011	1 - 132	15 - 146	
HCWC145	882	577704	1 - 292	15 - 306	
HCWC101	883	921586	1 - 437	15 - 451	
HCWC138	884	556358	1 - 544	15 - 558	
HCWC186	885	790718	1 - 147	15 - 161	
HCWC185	886	529243	1 - 324	15 - 338	
HCWC110	887	888992	1 - 466	15 - 480	
HCWC162	888	715981	1 - 309	15 - 323	
HCWC167	889	751963	1 - 328	15 - 342	
HCWC116	890	667392	1 - 231	15 - 245	
HCWC165	891	529230	1 - 437	15 - 451	
HCWC196	892	963564	1 - 225	15 - 239	
HCWC125	893	518793	1 - 297	15 - 311	
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HCWCN40	894	835584	1 - 425	15 - 439	AC016027, AF088219, AL034417, AL008635, AC007565, AC005206, AC002544, AC005037, AC005081, AC016830, Z99716, AF015720, AL031672, AP000244, AL121655, L78833, AL096701, AC005069, AC008372, AC004796, AL035587, AC005013, AC007676, AC005667, AC004638, AL040976, AL008725, AC004087, AC005951, AB023052, AL035461, AF064861, AC005832, AC007227, AL229041, U62293, AC008012, AL023879, AC005015, AC005046, AC005529, AC006285, AL121658, AF001550, U85195, AC005736, AC004955, AF037338, AL031229, AL132857, AC007384, AL122020, AC007899, AC002980, AC005722, AC005255, AL049532, AF165926, AC004477, AC004820, AE000658, AF111169, AL022320, AC005251, AL050318, AP000132, AC006160, AC006679, Z97196, AL021939, AC007043, AC005972, AC002531, AC005057, AF111168, AL049795, Z97196, AL021939, AC005544, AL022322, AL049869, AC002301, AC009247, AL109802, AL008718, AF000555, AC004226, AC005023, AC007510, AC005412, Z68870, Z83840, AL031228, AL035415, AP000248, Z93017, AC000052, AL031005, AC004491, U63834, Z99128, AC005702, AL021578, AL135744, AC007308, AC004921, AC008033, AF053356, AC004047, AL132712, AC009516, AC007199, AL023803, AL110502, AL117328, AP000690, and AC005065.
HCWCN40	894	835584	1 - 425	15 - 439	AL032822
HCWCN45	895	723418	1 - 505	15 - 519	AC004098
HCWCN61	896	924894	1 - 294	15 - 308	
HCWCN92	897	527088	1 - 419	15 - 433	AA716191, AL031432, and Z65992
HCWC002	898	920876	1 - 303	15 - 317	AA554430, AA528234, F16356, AC007263, Z86064, AL122023, AL008719, and AC002430.
HCWC021	899	522225	1 - 145	15 - 159	
HCWC035	900	706490	1 - 504	15 - 518	F30251, AA371410, AA831919, AA385775, A1929796, AW089625, AL345334, R70883, A1283938, AW008184, AA535216, R92658, F24272, R70884, AA610255, A1885465, A1884383, A1908508, A1908525, A1278801, AC004491, AC004448, AC005291, AL031121, AC007880, AC007193, AC003041, AC008372, AL049776, AF196969, AC005091, AC016830, AC005102, AC006449, AF042484, AC006013, AC005921, AL009181, AC006948, AC005180, AC004242, AC006023, AC007488, AC004659, AC002039, AC004891, AC005399, Z75744, AC004019, AL031733, AL031228, U95742, AC007216, AL035684, AC004087, AC005971, AL110502, AL049646, AL031289, AP000555, AC007425, AL096712, AC007226, AP000689, AL031311, AC005535, AC003663, AC005225, AC008041, AC005820, AC006530, AC002400, AL031588, AC005874, AF134471, Z951115, AL117355, AP000512, AC007056, AC004475, AC004913, L78810, Z83844, AC007690, AC006160, AC006277, AF109907, AC005803, AC005015, AC004686, AC004865, AB020865, AL121653, AC005668, AC005932, AC004921, AC004843, AC012627, AL078639, AC005839, AC005954, AC006441, U66629, AL022165, AC007386, AC004033, AL035413, AC006001, AC004142, AP000302, AC004859, AC009533, AC005736, AL132994, AC006285, AC005726, AC002094, AC007055, AD000092, AC005520, AP000500, AF111168, AC005081, U95740, AL121923, AL121825, U07000, AC002544, AC002470.

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HCWC054	901	558274	1 - 368	15 - 382	N53621, AW302766, AA843874, AC007677, AP001136, AC009308, AL034377, AP000473, AC003669, Z84469, AC006948, AC007077, AL027399, AP000099, Z97198, AP000036, AL0035686, Z68326, AC005341, AC007126, AP000262, AC002367, Z83313, AC009399, AC004806, AL022166, AC002086, A1229041, A1133269, AF020801, AF107885, AC007556, AC004597, AC005837, AC002527, and AL080239.
HCWC063	902	557917	1 - 310	15 - 324	
HCWC072	903	527546	1 - 296	15 - 310	AC005907.
HCWC077	904	772515	1 - 99	15 - 113	
HCWC068	905	573148	1 - 203	15 - 217	
HCWC015	906	527688	1 - 312	15 - 326	AA828573.
HCWC048	907	531423	1 - 106	15 - 120	AL008639.
HCWC095	908	723610	1 - 99	15 - 113	
HCWC031	909	693632	1 - 656	15 - 670	
HCWC064	910	526482	1 - 309	15 - 323	N66690, A1200947, A127410, A1932346, AW008872, C06101, and AA053116. AW150387, AA533054, H71678, AA568314, AW419389, H72278, A187148, F18111, AL040374, A1431513, AA605266, A6010433, AA904211, AA018923, AA513921, AW167154, AA468505, AA468371, A1880329, AA516320, AA899179, A1917132, AA056248, H67064, AA579278, AA493628, AA492524, AW002831, H72688, A1640411, AA605201, T74524, AA228368, AA721561, AW275699, AA742775, AA282951, AA862075, A1583291, AA365520, R74433, AA577141, A1635440, AA689351, N73060, H84412, H79453, AA515138, A10569401, A1366993, A1915293, AA526193, AA502098, AC004525, AC002303, AC007227, AL024507, AL021368, AC005088, AF196999, AF030453, AL034371, AL031905, U62317, U95743, AC004985, AC002565, M87889, U95741, AF051356, AC005971, AC004883, AL031657, AL022336, AC006079, U07000, AL049539, AL049780, AC008072, AC005841, AP000052, AP000120, AP000702, AF111168, AC002375, U02047, U91323, AC004815, AC004862, AC005838, AC004887, AC006241, AL031282, AC002352, AC006486, AC000004, AL096701, AC009516, AC004983, AL049569, AC006088, AL031056, L78810, Z84487, AC005244, AP000320, AC009464, AL049758, AL020997, AL049692, AC004448, AP000884, AC006285, AC003663, AC005899, AC004466, AC003085, AC002223, AL031985, AL121769, AP000141, AL021918, Z98941, AC006965, AC005632, AL109801, AF000167, D87009, AC006449, Z95113, AP000553, AC004685, AC006117, Z95152, AL033527, AF047825, AF134726, AC002551,



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HCWCSC12	911	585202	1 - 285	1 - 217	954070	676336	741925	921618	577688	725584	764602	527695	527541	713416	921569	925	861950	926	861839	927	861839	928	861950	929	861950	930	861950	931	861950	932	861950	933	861950	934	861950	935	861950	936	861950	937	861950	938	861950	939	861950	940	861950	941	861950	942	861950	943	861950	944	861950	945	861950	946	861950	947	861950	948	861950	949	861950	950	861950	951	861950	952	861950	953	861950	954	861950	955	861950	956	861950	957	861950	958	861950	959	861950	960	861950	961	861950	962	861950	963	861950	964	861950	965	861950	966	861950	967	861950	968	861950	969	861950	970	861950	971	861950	972	861950	973	861950	974	861950	975	861950	976	861950	977	861950	978	861950	979	861950	980	861950	981	861950	982	861950	983	861950	984	861950	985	861950	986	861950	987	861950	988	861950	989	861950	990	861950	991	861950	992	861950	993	861950	994	861950	995	861950	996	861950	997	861950	998	861950	999	861950	1000	861950	
HCWCSC51	912	921636	1 - 217	1 - 258	913	954070	676336	741925	921618	577688	725584	764602	527695	527541	713416	921569	925	861950	926	861839	927	861839	928	861950	929	861950	930	861950	931	861950	932	861950	933	861950	934	861950	935	861950	936	861950	937	861950	938	861950	939	861950	940	861950	941	861950	942	861950	943	861950	944	861950	945	861950	946	861950	947	861950	948	861950	949	861950	950	861950	951	861950	952	861950	953	861950	954	861950	955	861950	956	861950	957	861950	958	861950	959	861950	960	861950	961	861950	962	861950	963	861950	964	861950	965	861950	966	861950	967	861950	968	861950	969	861950	970	861950	971	861950	972	861950	973	861950	974	861950	975	861950	976	861950	977	861950	978	861950	979	861950	980	861950	981	861950	982	861950	983	861950	984	861950	985	861950	986	861950	987	861950	988	861950	989	861950	990	861950	991	861950	992	861950	993	861950	994	861950	995	861950	996	861950	997	861950	998	861950	999	861950	1000	861950
HCWCSC51	912	921636	1 - 217	1 - 258	913	954070	676336	741925	921618	577688	725584	764602	527695	527541	713416	921569	925	861950	926	861839	927	861839	928	861950	929	861950	930	861950	931	861950	932	861950	933	861950	934	861950	935	861950	936	861950	937	861950	938	861950	939	861950	940	861950	941	861950	942	861950	943	861950	944	861950	945	861950	946	861950	947	861950	948	861950	949	861950	950	861950	951	861950	952	861950	953	861950	954	861950	955	861950	956	861950	957	861950	958	861950	959	861950	960	861950	961	861950	962	861950	963	861950	964	861950	965	861950	966	861950	967	861950	968	861950	969	861950	970	861950	971	861950	972	861950	973	861950	974	861950	975	861950	976	861950	977	861950	978	861950	979	861950	980	861950	981	861950	982	861950	983	861950	984	861950	985	861950	986	861950	987	861950	988	861950	989	861950	990	861950	991	861950	992	861950	993	861950	994	861950	995	861950	996	861950	997	861950	998	861950	999	861950	1000	861950
HCWCSC51	912	921636	1 - 217	1 - 258	913	954070	676336	741925	921618	577688	725584	764602	527695	527541	713416	921569	925	861950	926	861839	927	861839	928	861950	929	861950	930	861950	931	861950	932	861950	933	861950	934	861950	935	861950	936	861950	937	861950	938	861950	939	861950	940	861950	941	861950	942	861950	943	861950	944	861950	945	861950	946	861950	947	861950	948	861950	949	861950	950	861950	951	861950	952	861950	953	861950	954	861950	955	861950	956	861950	957	861950	958	861950	959	861950	960	861950	961	861950	962	861950	963	861950	964	861950	965	861950	966	861950	967	861950	968	861950	969	861950	970	861950	971	861950	972	861950	973	861950	974	861950	975	861950	976	861950	977	861950	978	861950	979	861950	980	861950	981	861950	982	861950	983	861950	984	861950	985	861950	986	861950	987	861950	988	861950	989	861950	990	861950	991	861950	992	861950	993	861950	994	861950	995	861950	996	861950	997	861950	998	861950	999	861950	1000	861950
HCWCSC51	912	921636	1 - 217	1 - 258	913	954070	676336	741925	921618	577688	725584	764602	527695	527541	713416	921569	925	861950	926	861839	927	861839	928	861950	929	861950	930	861950	931	861950	932	861950	933	861950	934	861950	935	861950	936	861950	937	861950	938	861950	939	861950	940	861950	941	861950	942	861950	943	861950	944	861950	945	861950	946	861950	947	861950	948	861950	949	861950	950	861950	951	861950	952	861950	953	861950	954	861950	955	861950	956	861950	957	861950	958	861950	959	861950	960	861950	961	861950	962	861950	963	861950	964	861950	965	861950	966	861950	967	861950	968	861950	969	861950	970	861950	971	861950	972	861950	973	861950	974	861950	975	861950	976	861950	977	861950	978	861950	979	861950	980	861950	981	861950	982	861950	983	861950	984	861950	985	861950	986	861950	987	861950	988	861950	989	861950	990	861950	991	861950	992	861950	993	861950	994	861950	995	861950	996	861950	997	861950	998	861950	999	861950	1000	861950
HCWCSC51	912	921636	1 - 217	1 - 258	913	954070	676336	741925	921618	577688	725584	764602	527695	527541	713416	921569	925	861950	926	861839	927	861839	928	861950	929	861950	930	861950	931	861950	932	861950	933	861950	934	861950	935	861950	936	861950	937	861950	938	861950	939	861950	940	861950	941	861950	942	861950	943	861950	944	861950	945	861950	946	861950	947	861950	948	861950	949	861950	950	861950	951	861950	952	861950	953	861950	954	861950	955	861950	956	861950	957	861950	958	861950	959	861950	960	861950	961	861950	962	861950	963	861950	964	861950	965	861950	966	861950	967	861950	968	861950	969	861950	970	861950	971	861950	972	861950	973	861950	974	861950	975	861950	976	861950	977	861950	978	861950	979	861950	980	861950	981	861950	982	861950	983	861950	984	861950	985	861950	986	861950	987	861950	988	861950	989	861950	990	861950	991	861950	992	861950	993	861950	994	861950	995	861950	996	861950	997	861950	998	861950	999	861950	1000	861950
HCWCSC51	912	921636	1 - 217	1 - 258	913	954070	676336	741925	921618	577688	725584	764602	527695	527541	713416	921569	925	861950	926	861839	927	861839	928	861950	929	861950	930	861950	931	861950	932	861950	933	861950	934	861950	935	861950	936	861950	937	861950	938	861950	939	861950	940	861950	941	861950	942	861950	943	861950	944	861950	945	861950	946	861950	947	861950	948	861950	949	861950	950	861950	951	861950	952	861950	953	861950	954	861950	955	861950	956	861950	957	861950	958	861950	959	861950	960	861950	961	861950	962	861950	963	861950	964	861950	965	861950	966	861950	967	861950	968	861950	969	861950	970	861950	971	861950	972	861950	973	861950	974	861950	975	861950	976	861950	977	861950	978	861950	979	861950																																										

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HCWCV75	928	527080	1 - 226	15 - 240	
HCWCV85	929	966987	1 - 318	15 - 332	AC004801.
HCWCV93	930	792550	1 - 76	15 - 90	
HCWCX18	931	574933	1 - 364	15 - 378	
HCWCY16	932	507191	1 - 215	15 - 229	
HCWCZ33	933	523265	1 - 223	15 - 237	
HCWDB74	934	521894	1 - 265	15 - 279	AA745628, N69399, R32102, T51436, A1246386, H80215, A1139971, N27874, AA565911,

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HCWDB04	935	531417	1 - 299	15 - 313	and AC008041.
HCWDD15	936	660571	1 - 264	15 - 278	Al607096.
HCWDD60	937	575555	1 - 147	15 - 161	
HCWDG46	938	715509	1 - 147	15 - 161	
HCWDG49	939	861951	1 - 449	15 - 463	
HCWDH65	940	574250	1 - 533	15 - 547	
HCWDH85	941	574262	1 - 168	15 - 182	
HCWDH92	942	790618	1 - 212	15 - 226	
HCWDI37	943	849867	1 - 414	15 - 428	
HCWDI43	944	527685	1 - 309	15 - 323	
HCWDI64	945	924632	1 - 238	15 - 252	
HCWDI72	946	573034	1 - 163	15 - 177	
HCWDI79	947	526765	1 - 394	15 - 408	
HCWDI82	948	671636	1 - 221	15 - 235	
HCWDI89	949	953750	1 - 756	15 - 770	
HCWDI92	950	733472	1 - 341	15 - 355	
HCWDI21	951	524780	1 - 347	15 - 361	
HCWDI23	952	527555	1 - 346	15 - 360	
HCWDI31	953	531418	1 - 262	15 - 276	
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HCWDL45	954	523227	1 - 440	15 - 454	X55448, AC006388, Z85987, AL021940, AC004029, and AC005011.
HCWDL89	955	697736	1 - 410	15 - 424	AC003678, and AC003689.
HCWDL19	956	669721	1 - 356	15 - 370	AA279751.
HCWDL45	957	889416	1 - 397	15 - 411	Z98747.
HCWDL68	958	752320	1 - 163	15 - 177	AA315353.
HCWDM02	959	920505	1 - 413	15 - 427	
HCWDM06	960	935898	1 - 175	15 - 189	
HCWDM07	961	953742	1 - 468	15 - 482	
HCWDM14	962	849962	1 - 370	15 - 384	AW275378, AA551080, AA971039, D455576, Z606409, and Z646408.
HCWDM23	963	676215	1 - 449	15 - 463	
HCWDM60	964	754785	1 - 324	15 - 338	
HCWDM79	965	578967	1 - 340	15 - 354	
HCWDM15	966	557862	1 - 193	15 - 207	AF049574.
HCWDM60	967	861882	1 - 273	15 - 287	AW104830, and Z99714.
HCWDO11	968	967364	1 - 339	15 - 353	
HCWDO56	969	961273	1 - 516	15 - 530	
HCWDO65	970	920523	1 - 424	15 - 438	
HCWDP85	971	747141	1 - 282	15 - 296	
HCWDO35	972	573577	1 - 311	15 - 325	
HCWDR01	973	839104	1 - 465	15 - 479	
HCWDR42	974	529354	1 - 285	15 - 299	AC022517.
HCWDR63	975	849899	1 - 531	15 - 545	AC006146.
HCWDR86	976	527690	1 - 513	15 - 527	H47333, AA465102, AA614574, AC006343, AL049759, AC004876, AC006515, AC007057, AC005370, AL096755, AC004084, AC005037, and AC005488.
HCWDR89	977	787025	1 - 283	15 - 297	AA158919.
HCWDS10	978	880973	1 - 410	15 - 424	
HCWDS19	979	418009	1 - 203	15 - 217	
HCWDS26	980	684696	1 - 370	15 - 384	AL859744, AA525331, AW249151, AL720943, AA715075, AL567391, AA715173, AA482928, AA209208, AA774098, AW372037, AL049569, AC004962, U82828, Z97054, Z84466, AC004087, AC007684, AC006312, AC005971, AL034420, AL021154, AC003108, AC007298, AC002477, AC005527, AC003003, AL031663, AC007160, AF001549, AF109907, AL049843, AC005280, AC004520, Z97353, AC005399, AP000213, AC004222, AC002540, AC007685, AP000135, AL117258, Z98949, AC005914, Z95115, AC005529, AC004554, AP000031, AC006116, AC002402, AC006077, AC005324, AL133245, AC006006, AC005618, U96409, Z82206, AC006210, AC006195, AC004884, AC005235, AC007686, AL034429, AC002349.

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HCWDS40	981	523301	1 - 427	15 - 441	AA093224, N89520, and AF045432.
HCWDS41	982	669754	1 - 352	15 - 366	A1937612, AA729747, AW081591, T57592, and AC005261
HCWDS48	983	861849	1 - 425	15 - 439	A1049996, A1538540, R94288, AA365586, A952900, AC004253, AC004815, AC005529, AC004686, AC002351, AC005722, AC009178, AL049709, AL003147, L41440, AC005231, AC005071, AL135744, AC007676, AC004895, Z99716, AC008372, AC002126, AC000120, AC006241, AC005527, U48696, AC005841, AC006486, AC002316, AC004024, AL121852, AC006023, AC005703, Z68324, AL031767, AL031848, AC005781, AC006538, AC006084, AC006285, AL080243, AC004820, AL035413, AL133448, Z93023, AP000552, AL022721, AF196779, AC009464, AL050307, AC005348, AC004623, AL109799, AC004067, AC004887, AC034420, AL117694, AP000688, AC004890, AC011311, AP000513, AC007225, AC002477, AC007376, AL031680, AC016025, AF196969, AL133249, AC004526, AC002073, AC004263, AL021578, Z85987, AC002365, and AC007686.
HCWDS55	985	861943	1 - 441	15 - 455	
HCWDS59	986	934914	1 - 417	15 - 431	N83993, N83168, AC004924, and AF045432.

HCWDS61	987	741992	1 - 394	15 - 408	AA406404, AW405796, AA233053, A1741861, H67245, AA292217, A1301933, R69195, H43955, AA625270, AA371992, A1033494, N42102, AW025130, AA010129, A1870802, R48046, A1799541, H26714, A1304348, A1017809, A110484, AA056473, A1220164, AA234535, A1208430, A470071, A1560756, H81562, H26715, A1131097, AA232686, AA2C04258, N88601, AA247964, N88782, AA095359, H58760, N83168, N89520, N84855, N83991, AA247827, N83992, AA096046, N84048, S78798, AF103726, U48696, AF045432, AF039608, AF102850, and AR066487.
HCWDS83	988	612257	1 - 480	15 - 494	AC005940.
HCWDS91	989	557931	1 - 431	15 - 445	N88601, N84855, N89520, N83992, AA095359, AA247827, AA247964, N84048, N83991, AA096046, N83168, N88782, H58760, AA093224, N84718, N83993, AA095641, AA096066, N86694, N84712, AA471338, N55698, N88518, N84830, N84829, AA215908, AF045432, AF103726, S78798, AR066487, AF039608, AF102850, U48696, AF032922, A1243486, and U39066.
HCWDS94	990	959650	1 - 417	15 - 431	N57782, A157128, A1038029, AA129000, A1061313, AA349923, A1520984, A1174489, A1828721, A1285651, R79396, AW192002, AW337817, AA531660, M77964, AW021674, AA557945, AA364147, AA135761, AA018258, AW021847, A1572680, AW069110, A1570470, N80469, A1308529, N55076, AA610644, AA205931, AA579417, H24331, F17312, AA526659, A1345256, A1708565, A1307563, N99564, H52795, A1003391, AA828840, AA730530, H59856, AA526658, A1003068, AW020682, A1084999, A1760850, AA218684, AA084320, A1567676, AA676462, AA084148, AW028376, H53373, A1124558, AW341878, AA834850, AA598497, R87909, AA053463, R86876, A1570067, T59937, AA468923, R88475, AA038380, AW069769, AA372646, AA632869, AA293809, H81012, AA411337, A1884404, F04021, AA613765, A1926876, AA015948, AA658443, AA748071, F24745, AW243864, H57065, AL044566, N52581, N55296, AA227713, AA369465, AA640305, H05066, AC004983, AC005234, AC003102, A1079342, AF111168, AD000671, K03021, AL031291, AL022318, AP000691, AC005031, AC005046, LA7222, AC005331, AC004999, Z98200, AL133448, AL049540, AC006088, AC005839, I34294, AC005412, AL121655, AC005332, Z97630, Z93017, AL121825, AC007537, AC006953, AC005180, AL080243, AL035071, Z84488, AC005837, AC002369, AL035587, AC005089, AC007055, U85195, AP000692, LA7229, AC006946, AC004491, AC005081, AC006116, AE000658, AC005329, Z94161, AC002310, AC005102, AC004099, AC007051, AC005755, AC005696, AC006277, AC007919, AP000689, AC005355, AC007546, AC005666, AC005768, AC005011, AC002312, AL034548, AL050321, LA7227, AL135744, AC005682, AC007676, AC012627, AC005300, AB001523, AC000379, A1700039, AC006538, AC006231,
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				15 - 547	

HCWDW43	1002	714423	1 - 345	15 - 359	<p>C16624, AW117750, A1688846, A1921188, AW303876, A1963720, AA528516, AL046409, A1344844, AC007848, AC004712, AL121603, AC006277, M62424, AR025392, AP000352, U96409, AC003381, AC004066, AL109799, Z84718, AC005338, AL121603, AR025392, AP000496, AC004862, U63721, AP000134, AP000212, AF107885, AC005866, U166059, X78837, AP000494, AP000350, AF131217, AC003983, AP000351, AL121934, AC006333, Z99774, AP000692, AC004592, Z92540, AC008115, L49046, AC005887, AC004992, AC003966, AC005618, AL022329, AC007536, X78901, AC006538, AL021918, AC006241, U47924, AC004802, AC006120, AL096862, Z84474, AL109984, AC005856, U95740, AC006332, AC007263, AL022323, AC000356, AL031733, AC004638, AC003112, AL049613, AP000512, AL022318, AL079340, AL049757, AC004933, AC005696, AP000034, AC004741, AC007435, AC005690, AL020993, AL009031, AC002326, AC005940, AC006007, AL133382, AL035681, AL121591, AC007285, AL008629, AL031255, AF023268, AC006146, AL035460, AC006462, AL049776, X53548, AC005625, AP000252, AC006077, AL049610, AC004542, AP000031, AL139054, AP001053, AC006285, AC007680, AL035071, AL133485, AC009516, AL109657, Z99496, AC008134, AC003035, U07977, AL121915, AC004804, AP000553, AC002508, AL016026, AL049712, AL021155, AC004010, AP000354, AC003050, AC005231, AC006511, AP000552, AP000230, AP000144, AC004895, AC020663, AC000353, AC007707, AC008173, Z86662, AP000555, AC006211, AL049766, AC004948, AC005911, AC003977, AL049759, AC004168, AC006449, AL132987, AL031276, AC005284, AF190465, AC004468, AC004383, AC002544, AL035361, AC005998, AC000003, AF023460, AC004659, AF015153, AC004087, AL021877, AL023284, AC004650, AC005703, AF108083, AC002364, AC006001, AC006157, AC005486, AF165926, and AL133245.</p> <p>AW419201, AW274349, AF625244, A1613459, AL042420, AW302013, A1284640, A1312309, AW166815, AL119691, AA713815, AL471481, AA682912, AA581903, AW162049, A1292531, AL046409, A1281881, AA493464, AW073470, AW167799, AA531372, AA634227, A1859742, AW020340, F46273, AW303196, AW103981, AF177861, A1339850, AA425283, A4601492, AA521323, AA502103, AA630476, AW085751, AW301350, AA229005, AW103758, A1310670, A1567674, AW265385, F30933, AA244357, AW304584, AW3411992, A1754955, A17521929, AW072963, AL038785, AF702049, AA521399, A1368745, AA593247, AA489390, A1935827, A1061143, AL036334, N53150, A1801591, AA631915, AA525824, A1889781, A1611990, AW162314, A1367975, AA469451, AA584201, AL042753, AA806796, A1747703, AA837677, AW265468, AA595661, AL121039, AW162332, AC005808, AC007051, AC007919, AF077058, AP015151, AL121934, AC005907, AL023575, AC007066, AC005754, AC005049, AC006511, X75335, AL139054, AL034420, AL009181, AC005330, AL049636, AL008582, AC007216, AL031680, AC005225, AL035659, AC002310, AC006037, AL009179, AC002544, U91326, AP000503, AF134726, D83989, AC004134, AC004099, Z85986, Z93023, AL022322, AC005231, AL035460, AL050312, AL049874, AC016026, AC006277, AP000704, AL016025, AC007845,</p>
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HCWDW57	1003	927656	1 - 235	15 - 249	
HCWDW61	1004	574859	1 - 351	15 - 365	
HCWDW62	1005	849960	1 - 586	15 - 600	
HCWDW73	1006	861934	1 - 373	15 - 387	

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HCWDW74	1007	952698	1 - 421	15 - 435	
HCWDW78	1008	773698	1 - 336	15 - 350	
HCWDW90	1009	529233	1 - 301	15 - 315	
HCWDW93	1010	574155	1 - 401	15 - 415	
HCWDW94	1011	753166	1 - 942	15 - 956	
HCWDW96	1012	975401	1 - 52	15 - 66	
HCWDX19	1013	523233	1 - 447	15 - 461	
HCWDX22	1014	967361	1 - 415	15 - 429	
HCWDX36	1015	861932	1 - 366	15 - 380	AI022659, AI248903, RI6508, AL036251, AI688963, AI537814, AC005015, AC006512, AC000120, AF173228, AF053356, AC000119, AL096701, AP000558, AC007263, AC005519, AC002301, U47924, AC005902, AC004491, AL022316, AC005081, and AF003626.
HCWDX39	1016	573574	1 - 332	15 - 346	
HCWDX52	1017	661568	1 - 535	15 - 549	AW339619, AW169183, AI797998, AA595661, W85818, AL042667, AL042670, AL039117, AI744963, AA489390, AI732596, AI439525, AI251696, AA132947, AA748071, AW057760, AI732563, AA180056, AW265468, AW272815, AI1174703, AI285651, AI285651, AL473671, AI250552, AW072963, AI254508, AA664963, AI251284, AI251203, AA564256, N70293, AA729004, AI251034, AI310670, AW409626, AI523205, C14614, AA814719, AA133568, AA598608, AI679486, AI869797, AI284543, AA599712, AA995373, AI224583, AA814503, AA639155, AI088903, AW273201, AW273146, AA425283, T03928, AW303098, AI088529, AA584484, AA503018, AA157876, AW086291, AI690379, AW020094, AW410844, N27340, AA324108, AI254770, AW409621, AA648605, AW069273, AI254267, U85195, AE000658, AC004263, Z99291, AP000510, AC002312, AC005837, AL009181, AC004587, AI109827, AL034420, AL139054, AF196779, AC005154, AC001293, AC002477, AC007384, AC004196, AB023048, AC006162, Z98036, AC0066011, AC005740, AC002302, AC009516, AC005215, AL13163, AC005228, Z98051, AC007216, AC001329, AL133448, AC004973, AL121652, AL031311, AL135744, AC005041, L44140, AP000133, AP000211, AC002430, AL034549, AC005355, AC002314, AC004634, AC005829, Z95114, AC007240, AL022165, AC005913, AC002996, AI098582, AC005067, AL022334, AL109952, Z84469, AC004522, AL049569, AL035086, AF196969, AC006285, AC005225, AL035587, AC005409, AL031427, AC004148, AC004876, AC005839, AC003665, AC004929, AP000355, AC010205, AL096791, AC005330, AC004812, AP000252, AC005231, U47924, AC004887, AL034421, AC005257, AP000356,

HCWDX65	1018	920877	1 - 340	15 - 354	Z86900, Z98742, AL02316, D87675, AC002350, AC007226, AF109907, AC009247, AL031281, AP000008, AP000031, Z97630, AC007227, AP000691, AC002310, AC000502, Z85986, AL109628, AL022313, AP000503, AC016025, AC002369, U80017, AP000159, AL022336, AL096702, AC005911, AC003682, Y18000, AL049830, AC003982, AC000355, AC003379, AC005081, AC005015, Z98941, Y050317, AL096774, AC006013, X69907, AL135879, AL127190, AL096701, AC007011, AP000065, U52111, AC006057, AC004106, Z85987, Z94865, AC012330, AF165926, AC004874, AC004755, AC006241, AC009399, AC006538, AF205588, U78027, AC004765, AC004668, U95742, AC004520, Z96074, AL132992, AL022238, AP000248, AC004771, AC002544, AC008018, AC005722, AC005546, AL034429, L78833, AC004859, AC005049, AL035659, AL035684, AC004491, AP000257, AC004835, AL031680, AC004922, AL021918, AC004881, AC004686, AC006479, A1246003, M89651, AL049757, AC005519, AC005527, AC003112, AC002425, AC002306, AP000704, AC005500, AC005779, Z93930, AL031276, AP000553, AL035422, AC004019, AC004815, AC007066, AC005377, AC004253, AC006121, AC002126, AC004647, AC005914, AC004584, AC004804, AP000152, Z95703, Z83844, AF196971, AC005880, AC006441, AC005058, AC008008, AC006084, AC005670, AF111169, AC004033, AC007731, AC004975, AC005730, AF129756, AC004386, AF134726, Z95115, AC003110, AC005726, AC000052, AL009172, AL022323, AC003010, AC005288, AC004858, AC005932, AC008044, AL020993, AC003101, AL0080243, AP000511, Z69890, Z93017, AC007546, AC007934, AL031666, AP000689, AC007151, AC007298, Z99128, AC005821, AC005666, AC007421, AC002377, AC006581, AB025285, AL021406, AL121603, AL049697, and AL031584.
HCWDX65	1019	926114	1 - 226	15 - 240	AL031296.
HCWDX87	1020	861933	1 - 330	15 - 344	T27308, and AA187085.
HCWDX47	1021	573557	1 - 303	15 - 317	
HCWDX13	1022	673998	1 - 383	15 - 397	
HCWDX289	1023	576697	1 - 203	15 - 217	
HCWEA30	1024	681277	1 - 396	15 - 410	AL079734, AA581247, AA452887, A1912401, AA614163, AA187231, AA559241, AW151247, AL0084609, H53217, N72170, AA228349, AL146750, AW188742, F00564, AL048275, AL038842, R95840, H66577, AA713705, AA470567, A1251429, H60249, N33611, T74524, A1289505, A1635440, AA654874, AA581471, AW237905, A1742168, AA228338, AA297666, AW008169, AL181917, A1249688, AA666295, AA601674, AA502991, AA481887, AA326034, AA570255, H63660, AL109827, AC007546, M37468, U47924, AC004230, AL109758, AC007226, AC004813, AC005379, AC004217, U91326, AC004150, AC006538, AC005924, AC005746, AC005212, AC004841, AC005399, U96629, AC009263, AC005332, AF003626, AC008072, AC007285, AL049643, AC005911, AP000502, AL135744, AC005288, AC004876, AL015697, AL136295, AF030453, AL109963, AF196779, AP000065, AC007277, AC004878, X83822, AC005067.

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HCWEB56	1037	527051	1 - 534	15 - 548	AC007136, AL121748, and AL031279.
HCWEB71	1038	573147	1 - 423	15 - 437	AW362435.
HCWEB11	1039	948689	1 - 429	15 - 443	AA724231, AW021007, AA728496, AL624379, AL19676, AA565911, AA837771, W63553, AL041613, AA569734, T03928, AW242279, T00210, AA507234, AL624234, AA804815, AL119563, AA740736, AA493784, AH59866, AL018726, AA507990, AA557945, F29948, AC010202, AL049553, AL031279, AC004104, AL034553, AL117694, AC007011, AL109627, AL096712, Z95152, AC006312, AL031283, Z93241, AC005243, AL031674, Z82215, AL096775, U24498, L39891, AL035681, AL035405, AL035683, AC005256, AC006146, Z85996, Z82179, AC005747, AC003950, AL031846, AC005821, AL115783, AC008041, AL079342, AC002430, AC003627, AC005519, AF196969, AC001644, AL021937, AC007510, AC004816, AC005358, AC002316, Z99774, U91323, AC007384, AC000025, AF139813, AC005089, AC002375, AC002978, AL049759, AL023807, AL035249, AC004228, Z95115, AF196971, AC004084, AC005696, AL034384, AC002395, Z82194, AC005632, Z83844, AP000355, AC002073, AP000359, AC005529, AC005919, AC005624, AC005600, AC004491, AL009181, AC006343, AC010205, AL031848, AC004961, AC005578, AC004953, D88268, AF001552, AL034429, AC002094, AC004552, AL049743, AC004889, Z97056, AC005940, AC008119, AL031666, Z82182, AL078463, AL050318, AC005156, AL021940, AC004687, AR036572, U91328, Z84484, AC005565, AC005244, AC005793, AC004125, AC007371, AC007057, AL049872, U52112, AF109907, AC004799, AP000346, AL022721, AF035397, AF003627, AC005509, AC006441, AL031228, AC005379, AC004025, AC005335, AC007537, AC003010, AL008583, AL109956, U82696, AC005332, AL031985, U12387, AC005841, U95740, U30518, AL031729, AF037338, U95743, AC004771, AL109657, AC012384, AC006316, AC009336, AP000501, AL133500, AP001063, AC004770, AC005538, Z85987, AC006486, and Z82190.
HCWEB13	1040	573413	1 - 450	15 - 464	AA995856, AL672210, T99719, AW148336, AL791144, AW440956, AW439999, AA907133, T05187, AL000677, AL678727, AA5386390, AA767864, AA285156, H52303, AA018440, AL660071, AL270092, H91317, AA490072, AL798234, AC004876, AP000302, AL024498, AC005525, AL031280, AC003964, AP000046, AP000114, Z93241, AC005585, Z85997, AC007050, AF196970, AC000072, AF121781, AC006238, L77589, AC002302, AL050402, AC004623, AC005609, AF059321, AC007371, L13972, AC002563, AL022336, AL023878, AC005182, AP000501, AL034408, AC005067, AL050309, AC005358, AL035249, AC004703, AC006137, AF155238, AC007406, AC007955, AL133500, AC006270, AC005015, and AC004230.
HCWEB02	1042	920544	1 - 254	15 - 268	
HCWEB03	1043	924743	1 - 536	15 - 550	AA960780, and AC004542.
HCWEB07	1044	953731	1 - 398	15 - 412	



HCWE822	1045	572960	1 - 338	15 - 352	
HCWE874	1046	738264	1 - 305	15 - 319	
HCWEE76	1047	770169	1 - 277	15 - 291	
HCWEE83	1048	781302	1 - 213	15 - 227	
HCWEF56	1049	573570	1 - 449	15 - 463	
HCWEF91	1050	849919	1 - 281	15 - 295	
HCWEF92	1051	573568	1 - 350	15 - 364	
HCWEF95	1052	526766	1 - 422	15 - 436	
HCWEG09	1053	523251	1 - 329	15 - 343	
HCWEG23	1054	531421	1 - 395	15 - 409	
HCWEG31	1055	693687	1 - 400	15 - 414	AF000323, AF000053, AF000121, and AF000168.
HCWEG47	1056	574191	1 - 355	15 - 369	AI828787, AC004983, AC004967, and AC006101.
HCWEG51	1057	964642	1 - 290	15 - 304	
HCWEG69	1058	948693	1 - 234	15 - 248	
HCWEG70	1059	881254	1 - 431	15 - 445	H330197, H79077, R79607, R81361, W15301, AI141202, AA176978, R18372, AA570224, R02744, AW029277, AA579368, AA492524, AA493628, R94876, AA831826, H72049, H73336, AW117723, AW117704, AI652371, AI12527, AC005940, AI022323, AC004912, AW117354, AC006139, AC009028, AC008069, AP000514, AC004638, AF001548, AP00701, AC004687, J00081, AC004854, AC000046, AC007014, AC007182, and AL035691.
HCWEG86	1060	572980	1 - 357	15 - 371	
HCWEH27	1061	527050	1 - 391	15 - 405	AF077000.
HCWEH53	1062	967056	1 - 429	15 - 443	
HCWEH76	1063	574187	1 - 319	15 - 333	AA808851, AA650159, and AA654653.
HCWEH93	1064	931466	1 - 314	15 - 328	
HCWEH94	1065	667919	1 - 744	15 - 758	AI733856, AW069227, AA410788, AW340905, AI625604, AW021917, AW068596, AA916430, AI687343, AA574442, AA847704, AW328331, AI890324, AA643770, AI963720, AA833875, AA833896, AW237905, AW117740, AI669589, AW084445, AA610509, AI634187, AA6669155, AL079734, AL046409, AA502991, AI679759, AI061313, AI753488, AI926728, AL079645, AA468505, AA535216, AW328000, AI45681, AW023111, AA847499, AA579179, AI345675, AI284640, AW029515, AL040374, AI457313, AI817230, AI583142, AW438542, AL040054, AI040051, AW303196, AI590442, AA644090, AW021583, AI613280, AW069769, AA904211, AA702637, AI431303, AA602906, AW301350, AI345695, AI254779, AI732483, AI282479, AA297145, AA630854, AW14011, AW193265, AA228778, AW419262, AI587583, AI587565, AI135377, AI753113, AW327868, AI138455, AA224889, AI119691, AA6665330, AI270171, AA455483, AA127426, AI247101, AI037632, AI923050, AI566408, AW023672, AI613389, AA904275, AI679294, AI891080, AI138265, AI267356, AI559438, AI732865.

AL281730, AI431513, AW327624, AI251576, AA053463, AI244127, AL042753, AI284543, AI610920, AA622801, AW265688, AA832016, AI168256, AW410844, AA832175, AI223626, AA526542, AA668455, AW270385, AI336054, AI250552, AA483606, AI361090, AL047349, T67090, AA402129, AI753672, AI267450, AI431517, AW004884, AI251034, AI890348, AA832145, AA527040, AW341903, AA526326, AI275982, AW407578, AA721645, AI0138842, AI791185, AA828047, AA650053, AI149478, AA526625, Z83844, AC006468, AC005484, AP001067, AC005488, AC007191, AP000331, AC020663, AC005527, AP000172, AP000057, AP000125, AC005529, AC004675, Z98946, AI21576, AP088219, AP000513, AL0490557, AL047995, U95740, AC005229, AP000688, AL022326, AC002369, AL031311, AC005701, AL022237, AC009248, AL080243, AC005696, AC002316, AC002126, AL117351, Z93930, AC005746, AL121653, AC004962, AC005519, AL023575, AC005837, AL022163, L14448, AC007308, AC007225, AC006312, AC003043, AC006057, AF053356, AL021368, AP000555, AC005722, AC004821, AC004644, AC005903, AC006479, AI133382, U91323, AC007666, AC005695, AC004477, AP000505, AC006138, Z95116, AC002463, AF207550, Z84487, Y14768, AC005829, Z97054, AC006274, AC000115, AC0009946, AL030996, AL049758, AC002277, Z97632, AL031730, AC003029, AC006111, AC006512, AL078612, AC009336, AC004476, AC005940, AC006530, AC004491, Z82203, U78027, AC004593, Z98051, AC005730, AC006965, AC007285, AC008115, AC005841, AL121603, AC006211, AP001068, AP000115, AL035422, AC005822, AC004832, L44140, AL031291, AC004084, AC005600, AC003104, AL035455, AC004778, AL022320, AL034420, AB017602, AC005060, AI011930, AL035071, AI139054, AF129756, AP000228, AC004030, AC005899, AC007546, AC005856, AI109801, AC007536, AC004841, AC005726, AL133289, AC007842, Z98742, AC004674, AC002991, AC005913, AF196779, AF015156, AP000140, Z84572, AC011504, AP000359, U95742, Z95114, AL135960, AI131016, AP000343, AC005755, Z86059, AC005089, AC004235, AC003101, AC019014, AC005844, AC008372, U07563, AC007686, AL034429, AC004967, L39891, AC005280, AC007216, Z97989, AI009610, AC005102, AL049757, AL096791, AC005209, AL008723, AC004849, AC005821, AC005088, AC005081, AF165147, AC005412, AL021367, AB003151, AC005071, AP000088, AC005368, AC005358, AF165926, AC005154, AC0005694, U62317, AC005777, AI133245, AC005619, AL050318, AL096701, AC004659, AC006050, AL096776, AC006208, AL022721, AP000692, AL023577, Z82188, AC003690, AL096757, AC002350, AC004061, AC005531, AD000813, AC004463, AC005776, AC004106, AC000052, AC004960, AC004985, AI010597, AL034449, AC004686, AL031846, L47234, AL031680, L11910, AC004663, M89651, AP000501, AC011604, AL136295, AL031432, AC004542, AL109758, AL035684, AL049588, U91326, Z98200, AC006064, AC003663, AF111168, AL022318, AC007312, AC008101, AL031848, AC007228, AL022328, AL033397, AC005300, AF015148, AC006139, AC004858, AC002544, Z97196, AC004019, AC005323, AL035405, AP000509, AL109628, Z93020, AC005037, and AC006071.

HCWEI19	1066	948690	1 - 297	15 - 311	
HCWEI30	1067	666625	1 - 259	15 - 273	
HCWEI43	1068	573508	1 - 409	15 - 423	AC004950.
HCWEI45	1069	576852	1 - 110	15 - 124	
HCWEI78	1070	861918	1 - 338	15 - 352	
HCWEI80	1071	573534	1 - 207	15 - 221	
HCWEI83	1072	529351	1 - 287	15 - 301	AP000556, and AP000557.
HCWEI91	1073	529650	1 - 516	15 - 530	
HCWEI02	1074	920488	1 - 449	15 - 463	
HCWEI08	1075	950734	1 - 424	15 - 438	
HCWEI22	1076	954137	1 - 490	15 - 504	
HCWEI26	1077	576717	1 - 377	15 - 391	AA065131, AW008791, AW009265, AI805884, and AA065200.
HCWEI43	1078	573526	1 - 319	15 - 333	
HCWEI69	1079	757674	1 - 244	15 - 258	AI479011, and AI538122.
HCWEI91	1080	572857	1 - 434	15 - 448	
HCWEK59	1081	855734	1 - 331	15 - 345	
HCWEK74	1082	573134	1 - 542	15 - 556	
HCWEK80	1083	574157	1 - 442	15 - 456	AA601043, AA069366, AC007685, AC007284, AC004491, and AC007510.
HCWEK84	1084	572843	1 - 241	15 - 255	AP001052, and AP001053.
					AA630672, AI818231, AW303008, AA780682, AA732253, AW103927, H25921, AA092310, H51061, AA345064, AA768389, AI254980, AA588001, AA629872, N74747, C15060, H12383, AA551181, AA370455, AI344995, H93097, AA380354, AI133909, AW341978, AI138182, AA570797, AA722225, AI870197, AA372346, AA568198, AW022655, AL047429, AI014843, AI923052, AA705687, AA037715, F01503, AA531580, AI590485, AI311519, AI537772, AA583466, AI439828, AA630535, AI002744, AL045808, AL046156, AA584125, N71685, AA282820, AI205010, AA491681, AI888261, AA338544, AI278972, AI537538, F13749, AI907530, AW081296, AI038498, AI923333, AA593375, H18298, AW151022, AA483108, AA502991, R65651, AL037052, AI499301, AW162288, AW196053, AI636730, AA298319, AW021627, AI349849, AA308716, AA330772, AW276396, AW078909, AW131272, AI251576, AA838227, AA903253, AA573131, AI056046, AA092571, AA037725, AA515457, AA575911, H40324, AW317027, AI366993, T71474, AI124933, AA613761, W01639, AI289941, AI289942, AI955697, AI494539, AA626432, T77680, AI249473, AA716211, AA702098, AW104793, H81840, AI889566, AI135576, C18550, AI298061, AI096817, AC005019, AP000013, AC005752, AC007308, AC004910, D88270, AI109628, AC004797, D85195, AE000658, U95740, AC004051, AC000070, AC002288, AI109798, AC003104, AB023049, AP000512, AC013111, AC003101, AI133246, AC008169, AF107885, AC004933, AC006080, LI40401, AC004674, AC005604, AP000505, AC004070, AC004596, AC003087, AC005207, AL023883.

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HCWEK89	1085	861914	1 - 245	15 - 259
HCWEL01	1086	916972	1 - 236	15 - 250
HCWEL08	1087	881309	1 - 142	15 - 156
HCWEL18	1088	827387	1 - 265	15 - 279
HCWEL27	1089	572846	1 - 244	15 - 258
HCWEL47	1090	523304	1 - 545	15 - 559
HCWEL52	1091	577417	1 - 449	15 - 463
HCWEL55	1092	572951	1 - 310	15 - 324
HCWEL96	1093	520223	1 - 328	15 - 342
HCWEM10	1094	968044	1 - 312	15 - 326
HCWEM37	1095	573151	1 - 404	15 - 418
HCWEM51	1096	920887	1 - 378	15 - 392
HCWEN20	1097	520237	1 - 330	15 - 344
HCWEN86	1098	573527	1 - 344	15 - 358

HCWEP18	1099	913670	1 - 401	15 - 415	AW291681	
HCWEP34	1100	523238	1 - 436	15 - 450		
HCWEP39	1101	660232	1 - 459	15 - 473		
HCWEP40	1102	306759	1 - 278	15 - 292		
					F00112, K00630, AF111167, AC006064, AC007055, AC006312, AC004777, AC004477, AP000023, AC005331, AL078472, AC004814, AC002347, AC007064, Z98048, AL034417, AL024507, AL024498, AC006548, AC004050, AC004934, AC005182, AC002546, AC002420, AC007790, AC006381, Z83840, AC005071, AF047825, AC005822, AC012627, Z82201, AC005944, AC005914, AL031005, Z84484, AL096791, AL031295, and AC006511.	
HCWEP43	1103	921346	1 - 412	15 - 426		
HCWEP001	1104	861910	1 - 288	15 - 302		
HCWEP014	1105	908245	1 - 355	15 - 369		
HCWEPQ15	1106	660520	1 - 285	15 - 299		
					R16298, AA488261, R15246, AA325932, F08114, W46162, H08289, U69190, R12912, and AC002985.	
					AA583955, AA526342, AA810078, AA219115, AA714453, AL872020, AA661921, AA610491, AA775207, AA503600, R40056, F04987, AL243584, AA316905, A1963720, AA677817, AW080134, AA782304, F18423, AA491284, AA601492, AA362698, A1696962, A1501060, AA531079, A1251436, A1061334, AW070892, AA847499, AA491814, AA664909, AA581903, AA478355, AA259186, A1686267, AA808877, A1035766, AW270343, A1119691, A134844, AA501821, AA515231, AA828042, AA525834, R04721, AA468131, F18638, AA737150, A1247264, A1476312, F01314, AA364224, AA502720, AA634889, A1307608, AA533303, AW084252, AA715355, AW084198, T41259, AW196064, A1889923, AW276817, AA644551, AW265385, AW075511, AA935988, A1589230, A1821271, A1358343, AW265009, AA522642, AA372852, F23430, A1364809, A1038072, F19012, A1049634, A1247199, AW082492, AA623002, A1283911, AA320714, T74382, AA362348, AA653375, AA521323, AA834727, AA805815, AA521399, A1284640, AA343705, AW300625, AA362511, AA635067, A1623720, AW715255, AA715267, AA650376, AA078441, AW248819, AA934680, AA848134, AA749054, AA459749, A1635818, AA508034, AA502104, A1358431, AA662871, AA515549, A1708009, AA503154, AA604333, AA603185, F16127, F00440, AW089682, F17802, AA773902, AA604897, AA281461, A1702314, AA720746, AA320113, A1160117, A1064952, T07019, AW002350, A1270002, A1754336, AA678436, AW071163, AW023990, A1044940, AA493708, A1783494, AA532524, AA338486, AA773733, AA531186, AA513141, A1537944, AA559290, AA531372, AA493206, F00135, AA713626, AA502866, AA346458, AA503284, A1298710, A1245679, AA985455, TS2733, AA478297, A1254316, AW274349, A1561255, A1709511, AA847012, A1469624, AA503119, AA664332, F16274, T06828, AW405114, A1860020, AA029992, AA513725, AA482711, A1246139, A1459768, A1151761, Z30073, H93893, A1110688, AW327868, AA394271, AA688036, H06039, AA074130, A1583283, F17555, AW150524, N62433, AA372481, AW075948, AA502963, AA514834, A1358236, A1355206, A1679045, A1859251, AA491802, N35602, AA594145, H63262, AA908468, A1890348, A1045053, AP001172, A1022322.	

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			Z85996.	
			T83652, N52834, AA010013, H52946, H64159, and AA703454.	

HCWER81	1113	574167	1 - 454	15 - 468	M78967, and AL031733.
HCWES03	1114	921933	1 - 540	15 - 554	D87470.
HCWES06	1115	935862	1 - 135	15 - 149	
HCWEW45	1116	571355	1 - 193	15 - 207	
HCWEW76	1117	861966	1 - 358	15 - 372	AL862242.
					AA420421, AA420839, AW340887, T68865, AA4706567, AA838190, AA363078, AA533315, AA484373, AA161177, AA161132, AA780541, AA338170, R54486, AL567402, CL6659, AA356567, AA745507, AA487198, AA372887, T70121, A1914883, N74208, AL568683, AA934825, AW050400, AW328172, AW082559, A1758256, AA581099, AA646863, T52935, AA604048, F12561, AA365815, AA501614, A1291317, AW270784, A1524360, AA837560, AW328050, H67805, AW328171, T47324, AW440837, A0071173, AA600741, AW083678, AA586866, AA320748, F01979, AW269488, A1053445, F28108, A1002744, AW081610, F08248, T63635, AA229121, AA744172, C15363, AA577732, A1827234, A0071132, AA744278, AL050332, AC005274, AC006101, AP000688, A121782, AC000080, Z84469, AL021917, AP000044, AB003151, AP000691, AC006040, AC008282, AP000330, AP0000295, AP000112, AC006572, AC006946, Z82899, AC001231, AC009405, AC005663, AF001552, AC005822, AP000171, AP000056, AC002300, U85195, D42052, AC004491, AC002425, Z84466, AE000658, AC005913, AC005253, AC001643, AC005387, AP000124, AL109653, AF109907, AC008981, AC006021, AC002565, AC002461, AC007350, AC006139, AC006486, Z98950, AC005393, AC006568, AF064861, AL133241, AC006305, AC005081, L31675, AL050338, AL0966705, AL049569, AL035652, D26141, AC005358, Z81364, Z97196, AL034411, AC004132, AL009179, AL090331, AC002326, AC004993, AL135746, AC004617, AL135744, AC006006, AC007786, AC007766, AP000939, AC004197, AC005944, AC006557, U89387, AC005015, AL031846, AC007096, AC002098, U71148, AC003678, AL008636, AC002483, AL035460, AC003689, AL035690, AC004953, AC006146, AF207550, AC004472, AC005902, AF064857, AC004878, AC004448, AC003101, Z84480, Z96074, AC005839, AC005660, AL031589, AL096769, AP000953, AP000160, AP000128, AP000206, AC002066, AP000245, Z83820, AL008718, A1133269, AC007298, Z68226, AC005512, AL096791, AC002110, AC004531, AB023048, AC005945, AP000511, AL035588, AC005011, AL035089, AP000687, K03021, AC010077, AL022476, AC002379, AP000126, AP000204, Z84487, AC005684, AC004859, AL132712, AC005412, AB017568, Z83840, AP000244, Z97832, AC005632, AC002347, AC006132, AP001551, Z93930, AL008730, AC005754, AC005484, AL021937, AL139054, AC005406, U50871, AC008545, AC004601, AC005089, AL021997, AC004151, AB020864, AL109627, AC006966, AC005548, Z95152, AC005082, AC006254, AC004383, AC005049, AL034429, AL050401, AP000884, U95742, AL031733, X90725, Z80897, AC003110, AL008719, J03071, AC006252, AC002550, AC005868, AP000152, AP000010, AL034423, AC006253, AC008062, AC009743, AC007262, AL022165, AC003081, AF047825, M63796, AC006023, AC006013, Z95113, AC007151, AC005486, AC004596, AL031681, AL031668, AC010206, Z69890,

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HCWEW77	1118	664922	1 - 416	AL020995.
HCWEX05	1119	928121	1 - 326	N87989.
HCWEX40	1120	574940	1 - 251	
HCWEX59	1121	709560	1 - 344	
			15 - 430	T56067, AA657057, AW248803, AA664148, AW249224, AA369477, AL138242, AA569187, AA584581, AA125788, AA828704, AL079667, AA834755, AA594725, AL168185, AW93500, AL179136, AA443390, F07193, AA516527, AL133723, AA365347, AA012897, H00934, F37169, T62975, AA503947, AA515346, AW406162, AA650271, AL189781, AL048558, AA502103, AA906889, N53150, AA904140, AA515435, AL078392, AA831388, AA364315, AA483223, AL1801591, X06123, AC002350, X61109, AC007193, Z83845, AC005913, AP000967, AL022329, AF200465, AC006285, AC005215, AC005365, AC005537, L81693, Z83826, U78027, AC005071, AC007666, AC003035, Z82188, AC004973, AC006965, AC006006, AL035422, AL035695, AC005385, AC005962, AC006312, AC005365, AC005003, AC005324, AC006600, AC000052, AL034420, AF165926, AC005736, AF109907, AP000362, AP000553, AP000010, AP000152, AL132712, AP000555, AC004019, AC002472, AC000159, AL121603, AC007565, AP000348, AC006571, AB016897, AP000354, AC003038, AC005755, AL035690, AC002077, L48038, AC004263, AC000353, AL080317, AL031589, AL008582, AR036572, U91328, AB023049, AC002483, AP006501, AL133396, AL022721, Z99716, AL035494, X03272, AL022476, AC004797, AL049776, AL022323, AF196779, AP000692, AL035089, AC004909, AC005740, AC002312, AC006211, AL021453, Z98200, AP001447, AC005822, Z97184, Z73360, AC002349, AC002301, AL139054, AL009178, AC007115, AL035460, AL035417, AL035681, U62293, AC004813, Z82244, AL023553, AL050332, AC004865, AL080243, AC000039, AL023228, Z98946, AC007999, AF134726, AC020663, AL009179, AC007664, AL022313, AC002448, Z69705, AL109963, AF019413, AC006130, J003147, AL049780, AC006039, AC005043, AL031257, AC005211, AC005057, AL135744, AC005200, Y07848, AC005516, AC006538, AC006530, AP000162, AP000020, AP000087, AC005670, AL021366, AC005783, AC005911, AL023879, AC005212, AC004622, Z69651, AC007308, AC009516, AF111168, AC004754, AC005235, AC005304, AL035072, AC005527, AL050338, AC003085, AC005730, AC007842, Z83822, AC005281, AC007285, Z98948, AC007182, AC005081, AL133245, AL023807, AC008079, AL031685, AL050318, AL031446, AC004099, AC005041, AC005940, AL031668, AC005776, AP000557, Z97056, AC006441, AP000512, AL096829, AC002070, AP000030, AP000151, AP000226, AC005754, AC009026, AL022311, AC002402, AC0016025, AC005544, AC007543, AF121781, AC007011, AC005274, AL008715, AC004890, AF091512, Z86690, AL031666, AL0035692, AL008718, AC007537, AC007324, AC012384, AC006515, AL035659, AP000047, AC005829, L76568, Z98742, AC006057, Z85986, Z83844, AC005969, AL132777, AC002470, AP000173, AP000500, AL034548, AP000502, AC004463, AC018633, AC006946,



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HCWEY66	1122	731772	1 - 323	15 - 337	
HCWEY07	1123	953701	1 - 412	15 - 426	
HCWEY33	1124	702597	1 - 418	15 - 432	
HCWEY34	1125	954142	1 - 233	15 - 247	
HCWEY84	1126	952692	1 - 438	15 - 472	
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HCWEY88	1127	785508	1 - 321	15 - 335	H44471, AI244061, AA161305, AA224525, AA555143, AA664248, AW270429, AI800535, AW270351, AI223626, AA135868, AW019964, AI054090, AI278972, AA365911, F32248, AI284543, AI254770, AI251944, H09639, AI251034, AI251203, AI251284, AI250552, AI251241, AI249853, AW265149, W32993, AW151870, AW058430, AI053934, W63553, AI053597, AA862312, T03928, AA487209, AW303098, C15504, AA340153, C14796, AA832152, H47368, C14627, Z95116, AC001026, AC005913, AF118808, AC005844, AC004662, AC006360, AC006313, AC004465, AL034400, AC004815, AC002365, AC004984, AL034549, AC007676, Z95118, AC008009, AL009181, AC005565, AC002465, AC005841, AC006388, AL031665, AL033397, AC007276, AC007028, AC008041, AC005746, AC002312, AF196969, AC004799, AL135746, Z97630, AL050318, AC005291, AC005288, AC005207, AC002369, Z94801, AC006121, AC002425, AF129756, AC003959, D88270, AL022162, Z94056, AC005237, AC005519, AC006352, AC002041, AL049745, AC005856, AC005041, AC005666, AC006130, AC005632, AL096701, AC004963, AC005015, AC005488, Z93017, AC009946, AC006359, AC005740, AC006241, AC004813, AC007263, AP000555, AL034418, AL117354, AC002287, AC005736, AC008044, L29766, AL080242, Z83843, AL035683, AL021878, AC005696, AL049539, AL121825, AC004150, AC004941, AC004895, AL023284, AC004185, AF000475, AC004686, AL121651, AC004033, AI011930, Z98950, AL035405, AL021807, AC004386.

HCWFA14	1128	925301	1 - 479	15 - 493	AC002456, AL022324, Z81364, U95740, AC001962, AL022323, AC005049, AC004804, U91323, AC007671, AC005251, Z98742, AL139054, AC005476, AL035423, AC006487, AP000502, AC003957, Z95331, AL022334, AC005776, AL049869, AC002477, AC007066, AL078381, AC007114, AF222685, AL031848, AL021937, U48697, AC005412, AC006333, AF134726, AF050154, AC004152, AL078634, AL022313, AC006441, AF130248, AL050308, AC000082, AL031311, AF107885, AP000045, AP000113, AP000509, AC004856, AL031666, AC005401, D87675, AP000512, AF196972, AL049834, AC006057, AC004148, AC008018, AF031078, Z82097, AC007537, AL008635, AC002544, AC007092, Z93023, Z84481, AC005157, AC004997, AC005274, AF030876, AC007666, AC004797, AL109939, D86992, AC006552, AP000300, U96629, AL022393, AC002449, AC004409, U78027, U62293, AP000065, AC007707, Z97987, AC007899, AC004912, AC005585, AL031320, Z85987, AC003086, AC005200, AL133163, AC006026, AC004876, D86995, AF001552, AL031432, AC006950, AL035422, Z98749, AC005089, and AC006392.
HCWFA65	1129	573193	1 - 236	15 - 250	T61555
HCWFA88	1130	578943	1 - 365	15 - 379	AP000126, AP000204, and AP000244
HCWFA89	1131	574370	1 - 257	15 - 271	AC002039, AC002045, U91326, AC002544, and AF001549.
HCWFC05	1132	932194	1 - 360	15 - 374	AC007283, and AC008179.
HCWFC17	1133	573186	1 - 367	15 - 381	Z98744
HCWFC65	1134	883787	1 - 340	15 - 354	
HCWFD07	1135	953700	1 - 571	15 - 585	
HCWFD19	1136	574915	1 - 267	15 - 281	
HCWFD29	1137	573381	1 - 210	15 - 224	
HCWFD47	1138	671946	1 - 300	15 - 314	AL799197.
HCWFD64	1139	954575	1 - 363	15 - 377	T81407, AC000692, and AF064861.
HCWFE06	1140	935856	1 - 379	15 - 393	AA663467, and AA663457.
HCWFE18	1141	573445	1 - 99	15 - 113	
HCWFF41	1142	840978	1 - 135	15 - 149	
HCWFF68	1143	506577	1 - 304	15 - 318	
HCWFF65	1144	578936	1 - 386	15 - 400	
HCWFF72	1145	856908	1 - 625	15 - 639	AA594971.
HCWFK16	1146	849988	1 - 187	15 - 201	
HCWFK20	1147	575696	1 - 225	15 - 239	
HCWFK35	1148	916795	1 - 540	15 - 554	AA491175, and AC003957.
HCWFK57	1149	861907	1 - 314	15 - 328	
HCWFK73	1150	761655	1 - 304	15 - 318	AA093114, AA523695, AA487726, AL364568, T62078, AL869786, H95822, AL686470, H81700,

				AA214042, AA297006, AA021561, AA056250, H69992, F34939, C16358, H45698, T94394, AA582746, AL697242, AA225004, AL371722, A1003444, AW264391, A1866580, AL697239, W81372, AL697235, AA358366, AL355246, AA364800, H64715, H683379, AA66587, A1973173, AA828476, AW019964, H29241, A1279417, AW419189, A1367551, N25079, AA243976, H29914, AA568314, AA378489, AL031591, U47924, AC004841, AL008730, AC005015, A1010770, AC003037, AC001228, AL133243, AC005839, AC004999, AC005726, AC005694, AC002470, AC006449, AC005520, AL049872, AC005736, Z84466, AL009181, AL049795, AC005480, L44140, AC007263, Z97055, Z98950, AP000692, AF152365, AC006360, AC003663, Z73359, AC002544, AC007308, AF196779, AC006241, AL132987, AL031848, AL049874, AC005519, AC004832, Z86090, AC005399, AC006045, AC007066, AC005088, AC005412, AC004476, AC002302, AC004033, AC005529, AC004765, AC005486, AL096701, AL032821, AC005684, AC004232, AC004921, AL139054, Z98036, AP000354, Z026898, AC004816, AC007637, AP000300, AL096791, U80017, AP000010, AP000045, AL031295, AC000079, AC009784, AL109827, AL080243, AC004522, Y10196, AL035420, Z99716, AC007057, AC005071, AL133448, AC004783, AC002432, Z84469, AC002395, AC004216, Z97632, AL133246, AC004770, AC006020, AC003086, Z83844, AC007179, AL031864, AC002073, AL031589, AC004019, AP000043, AP000111, AP000049, AC004518, AP000557, AC002563, AC005821, AC007390, AP000066, AP000113, AC006088, AC005102, AC004217, AC007363, AL121840, Z99127, AP00503, Z97053, AP000311, AC005488, AC005049, AC003029, AC004381, AP000553, X55448, AC004967, AC004659, AP000689, AC002996, AP000356, AC006111, AL024498, AF134726, AL022326, AF165926, AL008729, AL034549, AL121658, AL031667, AF111168, AC004687, Z98742, AC004813, AC005324, AC004223, AP000961, AC005899, AF196969, AC006487, AC006013, Z97181, AL022721, AF060568, AC006021, AC005089, AC005081, AC003108, AC005566, AC004797, AC006387, A1011930, AL033685, Z73417, AC005793, AC005280, AC012384, AF024533, AP000552, AL035681, AC003982, AL031659, AC007114, AC005386, AL035249, AL035683, AC004901, AC005971, AC003078, AC005562, AC008372, AC004099, AC005225, AC002351, AC004253, AL008707, AC000025, AC005740, AC000353, AC009599, AC006254, AC002492, AC005527, AL049694, AL034421, AC009516, U63630, AC005746, Z95152, L78833, AB023048, and AL031291.
			15 - 329	L44321, AL096867, AL022154, AC007567, AL034402, and AC004853.
			15 - 331	AL031673.
			15 - 200	AA579235.
			15 - 416	
			15 - 302	
			15 - 431	Y13758.
			15 - 304	N21434, A1126969, AW069769, AA551548, AA640563, A1031759, AA664248, A1300507, A1183392, F31670, AA219166, AA837771, AL1567676, AA648605, AA558402.

AA558716, W00479, A1521019, A1538404, A1884404, AA774169, T57096, AA846046, AW271071, AA225630, AA657808, A1251024, AW407679, A1872229, AA715508, R12600, A1281622, A1803824, A1241851, A1267356, A1926093, AW023975, AA364082, A1754257, A1801479, AA984891, T41134, AW243817, R33053, A1961232, AW085811, AA349923, AA602939, A1520984, AA987703, AW268793, AW439224, A1267450, A1065031, A19021744, A1745666, A10018923, A1032411, AA3533011, AA364147, F35684, A1732911, A1185394, AA507990, A1252776, AW406139, R95751, A1174827, A1668566, AA3309287, AA808842, A1469504, R33588, AA873661, AW157128, A1274691, H49749, AA633068, A1012829, H79323, A1093257, AA6040305, C14724, AW022796, A1601172, A1733523, A1038029, A1434103, A1828742, X84712, AA630122, A1708565, AA367920, AA338238, AW021674, A11888852, W02419, AA730530, A167129756, A1035587, AC005399, AF165926, Y18762, Z83845, AC005015, AC005089, AC004099, AC005730, A1133163, AL049591, AC005837, AC005828, U02057, AC006544, AL080317, AC005531, AC000039, A1020997, AL035445, AF196972, AF030876, AC007371, AC007051, AC007919, D42052, AC004053, AB023051, AP000116, AP000505, AC005105, Z98946, AC005821, AC006543, AB033024, AL136295, AC006006, AC006581, AL050320, AP000512, AC007226, AC005069, AL031848, AC004678, AC004668, Z83844, U78027, U91336, AC002544, AC006538, Z69366, AC007878, AL035422, AC007462, AC002306, AL096761, AC020663, AC005694, A1246003, AP000513, AC006953, AL117258, AD000092, AL078477, AF207530, AL109798, M89651, AB023049, AC007536, AL049636, AC003042, AC008372, AC005993, AL022336, AC006599, AC007687, AL121658, AL031721, AL049829, AC006062, AL008735, AL035086, AC000134, AL034548, AC006188, M81890, AC005527, A1251973, AC002369, AC006511, AC009516, U26425, AC004234, AF111168, AL031575, Z97630, Z98884, AC007899, AL031311, AC006121, Z98200, AL132712, AC005037, AB023048, AC005519, AC007277, AP000511, Z84480, AC007314, Z81369, U63721, AC004592, AC004073, AC007934, AF031077, AF134726, AL135783, AL035450, AL031295, AL079295, AC008044, AC006241, AC004257, AL049769, AL096699, AL049759, AC006088, Z95114, AL021707, AL023801, AF031078, AC005565, AC005952, AL035413, AL035652, AC016027, AC007227, AL034421, U91322, AC009248, AL008731, AC002492, AC005747, AL034553, AL031680, AC005759, AL109628, AC006211, AL031657, AC005529, AC004381, AL121934, Z73979, AC005695, AL022318, AC005390, AL109847, AC006162, AC005207, AC004953, U07563, D16583, AC004460, AP000256, AL008718, A65971, AC005261, A1003147, AC0060946, AC005365, AL135744, AC005031, AL022333, AC002310, D16517, AC006261, AB000882, AC005280, U24498, AL031903, Z68756, AL022476, AC007688, AC009498, AC002364, Z95116, AC004019, AC004814, Z83840, AC002991, AC004884, AP000510, AC004797, AC004477, AL133448, AC005778, AF076450, AC004975, Z84469, Z98051, AC005682, AL035045, AL035455, AC000075, AC000084, AC004703, AC006369, AC004673, AC006449, U80017, AC004897, AC007773, AC004130, Z82182, AL008628, AL127020, AC005325, AC006064,				
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HCWFM01	1158	916803	1 - 217	15 - 231	AC008115, AC004883, AC002400, Z93017, AL122023, Z69713, L78833, AC002036, AP000098, AP000099, AC005911, AC005375, AC005755, AL031284, AC004148, AC007450, AC004997, AP000275, AC002994, AC016830, AC004686, AL109613, AC007016, AC005046, and AC005914.
HCWFM11	1159	959457	1 - 365	15 - 379	AA054176, AL1669046, AA383798, R79698, AC003688, AP000096, AP000240, AL020997, AC006946, AC005070, AL096794, AL049849, AL079340, AL109914, AC019014, AL049646, AF111169, AC007073, AC005071, AL251973, AP000549, U82694, AF001549, AC005684, AC006953, AC004517, AC003065, AC005865, AC005033, AC005389, AL034406, Z98200, AC007842, AP000512, AC006544, Z82249, AL078583, AC005699, and AC010168. AA640305, AA156183, AF754257, AA631915, AA720732, AW083707, T71936, T58395, AL869455, AA862243, R68249, AL129133, AA883595, AA747469, AL241761, AW021105, AW023167, AL207424, AA804726, AA936746, AL230815, W01344, AL744199, AL763234, AA324242, R76686, AA776899, AA664963, AL135357, AL044701, AA593537, AL984742, AL917132, AW072963, AL307563, AC002470, AC004841, AC002094, AC005399, AC007066, AC005207, AF111169, AC004820, AP000240, AC005049, AP000092, AP000096, AL135744, AC003684, AC008018, AC007263, AC005529, AC005300, AP000011, AF001548, AB003151, AL035423, AC006511, AC007312, AC004707, AL031670, Z93017, AC005088, AC007371, AC006241, AL031293, AL022721, AF111168, AC004167, AC005295, AC002369, AL049653, Z99127, AC004234, AC004859, AC005736, D00591, AC005251, AC003043, AL021397, AF129756, Z98884, Z93930, AC006509, AF165926, AP003322, AC002375, AL049839, AC006121, Z84480, AC005071, AC007774, AC007395, AC006601, AC005224, AC002377, AC004076, AC004922, AL033524, AC000159, AP000361, AC004129, AL132987, Z84469, Z82246, AF053356, AP000153, AC005231, D87008, AC004477, Z97056, AF196969, AL035458, AL133246, AC002351, AP000053, AP000121, AP000557, AC007277, U29895, D87012, AL022336, AL049538, D88268, AC004263, AC004583, AP000065, AP000280, AP000030, AC002477, AL034429, AC005253, AC006166, AP000215, N57678, Z98304, AC005370, AP000505, AE006558, AC005632, AC005070, AC005821, AL031311, AC004762, AC003982, AC005772, AC007308, AF176815, AP000107, AP000039, AC007993, AL109839, Z99943, Z73420, AC007228, AC002060, AL096791, AP000556, Z86661, AP000497, AL049557, AC008038, AP000958, AL031733, AL035420, AC005856, AF024533, AC006030, N63543, M63480, AC002400, AC006455, AC005519, AC007565, AC006607, AD000812, Y11107, AC007537, AC004805, AC005919, AC005940, Z69713, AC002301, U85195, AC006254, AF038458, AC004491, AL023096, AL078463, AC005755, AC004815, AL035249, AC007076, AP000694, Z93016, AL033521, M63544, AP000348, AC002563, AC005875, AC005726, AC006160, AL049776, AC009516, AP000038, AP000106, AL031284, AC004472, AC007064, AC004851, L81692, AC005023, Z92542, AC006376, AL035462, AP000228, AC005520, AL034419, AC004799, AL035587, AC002395, and AL031681.

HCWFM16	1160	678627	1 - 368	15 - 382	W07244, H81645, H87712, Z18338, A1627848, A1022476, AF128536, and AF128535.
HCWFM26	1161	677348	1 - 356	15 - 370	AL021918, AC003070, Z93017, A1022316, Z97876, AC008079, AC004228, AL109827, AP001054, Z81370, AC008018, and AC004678.
HCWFM43	1162	715387	1 - 88	15 - 102	
HCWFM59	1163	757660	1 - 338	15 - 352	
HCWFM60	1164	740470	1 - 410	15 - 424	
HCWFM65	1165	849957	1 - 252	15 - 266	AL149018, AC006512, Z85987, AL117338, AC005970, AC003982, AL031681, AL050318, D87675, AC005233, AC007226, and AC008072.
HCWFM77	1166	706488	1 - 152	15 - 166	
HCWFM14	1167	680404	1 - 351	15 - 365	AL134393.
HCWFM22	1168	674750	1 - 381	15 - 395	
HCWFM37	1169	576547	1 - 255	15 - 269	
HCWFO01	1170	916814	1 - 357	15 - 371	A1657485, N83963, N88177, N87188, N83707, AR018815, U19066, U48696, AF045432, AL243486, U48697, AF102850, X99060, AF001863, AF061744, X99056, X99052, Y10299, X99058, X99051, AF011573, and X99055.
HCWFO02	1171	920416	1 - 372	15 - 386	
HCWFO20	1172	577709	1 - 303	15 - 317	
HCWFO24	1173	664581	1 - 328	15 - 342	
HCWFO30	1174	692814	1 - 316	15 - 330	
HCWFO40	1175	913855	1 - 407	15 - 421	
HCWFO51	1176	725756	1 - 72	15 - 86	AC002540.
HCWFP21	1177	531288	1 - 442	15 - 456	
HCWFP27	1178	927700	1 - 287	15 - 301	
HCWFP47	1179	849893	1 - 398	15 - 412	
HCWFP71	1180	933211	1 - 341	15 - 355	T65964, R01423, R01424, R05277, R44699, R51780, R44699, H11322, H13859, H13911, H21393, H22117, H45982, H98744, N37080, N62715, N93640, W60228, W76544, W87768, W90518, AA010775, AA011055, AA029083, AA029084, AA036822, AA057660, AA082814, AA101057, AA130702, AA132788, AA147813, AA151511, AA173298, AA187994, AA192370, AA243010, AA250948, AA521284, AA535404, AA594843, AA603875, AA627091, AA662313, AA721002, AA761271, AA826710, AA865743, AA975254, AA995525, C05796, AA206634, AA654116, AA283178, AA291958, AA291959, AA452464, AA628258, AA634632, AA447651, AA771717, AA812493, AA835367, AA846451, AA852494, AA003962, AA004339, AA094339, Z13658, Z41681, F03361, F03690, F09370, A1245866, A1251909, A1280679, A1202164, A1741905, A1524387, A1540076, A1479426, A1498061, A1566416, A1582492, A1127570, A1187378, A1191272, A1279638, and A1587165.
HCWFP81	1181	576363	1 - 306	15 - 320	

HCWFR11	1182	967266	1 - 170	15 - 184	
HCWFR83	1183	721373	1 - 450	15 - 464	
HCWFS22	1184	971566	1 - 365	15 - 379	<p>AI830563, AI675015, AI634079, AI766110, AI924352, AA506986, AI419874, AA417050, AI582146, AW302226, AI653982, AA707615, AA947674, AI824293, AA417181, AA925338, AI367252, AA344961, AW418521, AA559136, AI253198, AI028337, AI367507, AI367250, AI081854, AW150460, TI2625, AI873313, AA879191, AW087636, AI207096, AW087600, AA904762, and AI198471.</p>
HCWFS65	1185	572953	1 - 238	15 - 252	
HCWFT29	1186	690751	1 - 357	15 - 371	<p>AL041375, TS52772, AI572680, AW275432, AI801563, AA493404, AA810158, AW238575, AA601376, AA355367, AA515924, AA595661, AA484892, AW084173, AI251024, F01666, AW089625, AI355246, AI797998, AA526413, AA525807, AA019973, AI285111, AA602971, AI927275, AA199582, N90244, AA559241, AI002950, AA604601, AA640305, AI760835, AA367672, AA503298, AA397355, AL043719, AI973173, AA013168, AA313025, AW270768, AW272815, AI609972, AA515905, AW238016, AA112187, AI246796, AI935827, AA714011, AA228778, AI345157, F01532, AA513122, AW302903, AW275719, AW105463, AI048925, AI283938, AW238712, AI056177, AW419389, AI678468, AA420787, AW193493, AA657835, AW179316, AA837646, T48723, AA904275, AI926909, AI803809, AW020088, AA610784, AW023390, AI923052, AA079421, AA225392, AC003041, AL049830, AI031433, AC004448, AC005740, AC009516, Z83838, AC002119, AC005940, AC005920, AL023281, AC005261, AC012627, AC005821, AC005899, Z94056, AL035587, AL031432, AC004859, AC004019, AC034423, L05367, AC008124, AC005037, AL022336, AC004895, AC003098, AC003109, AC005822, AC005529, AP000066, AP000556, Z99570, AC020663, AC004448, AP000116, AB006882, AC005387, AL109627, AC007666, AL031390, AC006254, AC004623, AC004448, AC002347, AP000503, AF134726, AL031577, AC004686, AL049636, AC005486, AC004596, AC005971, AL022721, AL139054, AC002551, AC005523, AC005358, AC005527, AL121754, AL035684, AC004034, AC005913, AC006071, AP000049, AC007536, AC005902, AC006285, AC007216, AC005703, Z95114, U78027, U91326, AC006011, AC006449, AP000311, AC002059, AC005839, AP000512, AL049795, AL049766, AL049793, AC003956, AC005288, AL049709, Z98200, AC002511, AC004242, AL117694, L44140, AC005914, AL049692, AC003030, AF111169, AF111168, AL022311, AF045555, AC004539, AC004167, AC004878, AC007227, AL035422, AC004796, AC006511, AC002091, AC005104, AF031078, AC004821, AC005081, AC005004, AL033392, AC006057, AC004150, AC005318, AC002492, AC005722, AF030876, U62293, AC004882, AC004253, U63721, AC005736, AC006111, AC007225, AL035659, AC007030, AC000052, AC005695, AL022313, AF109907, AC002045, AC031393, AC000026, AC007395, AF141309, AL031282, AC003431, AC002544, AL022327, AC0066270, AL121655, Z83840, AC005015, AL049872, AC004854, AL133245, AC005412, AC005799, AL022328, AP001053, AC002115, AL049643, AF003626, AI246003, AC006360, AC018633,</p>

HCWFT33	1187	959471	1 - 258	15 - 272	AF196779, AL020997, AC002302, AC007308, AC004099, AL022237, AC002314, Z98048, AC005251, AP000513, AC004383, AF196969, AL031591, AL050346, AC005619, AC003688, AC006001, AL050318, AC004884, AC004816, AC005082, AF207550, AC002312, AC006023, AC005291, AC005274, AL031280, AL022316, AC005216, U07563, AF114156, Z84469, AC004491, AC007358, AC002310, AC000070, AC004894, AC005520, AL022334, AC003101, AC006055, AL133448, AL133553, AC002984, AC004887, AH001523, AC007919, AC002468, AC000009, AL080243, AC006487, AP000508, AP000326, AC007151, AC002477, AC006498, AL049757, AL121603, AL021154, Z83826, AL132777, AC006084, AC003006, AC004967, AC006368, AL049869, AC008044, AC005519, AC003070, Z83846, AL031368, Z83822, AP00122, AP001069, AP000054, AC004999, AL118497, AF038458, AC007263, AL022322, AC004805, AL109613, AC007066, AC002394, AC005257, AL035398, Z99716, and AL031003.
HCWFT44	1188	935855	1 - 338	15 - 352	
HCWFT77	1189	739571	1 - 259	15 - 273	AP022362, AA130574, and AC004492.
HCWFT84	1190	542236	1 - 396	15 - 410	
HCWFT003	1191	921944	1 - 307	15 - 321	AW205685, AL698601, AA884459, N23262, AA552480, and AA905404.
HCWFT007	1192	861902	1 - 107	15 - 121	AC006501.
HCWFT019	1193	573135	1 - 536	15 - 550	
HCWFT032	1194	716340	1 - 473	15 - 487	
HCWFT064	1195	577888	1 - 364	15 - 378	
HCWFT066	1196	853005	1 - 392	15 - 406	AA745185, AL216430, AP000553, and AC009516.
HCWFT076	1197	576839	1 - 401	15 - 415	AA768179, AA368329, AA346867, AA348271, AW439810, AL0278130, AL904944, T07285, AA558404, AW768090, AA229823, AL567191, AA228979, AW243945, AA279385, AA112924, N86484, F0586, AA297443, AA583579, AA078384, AL283938, AL421257, AA178489, T99020, AA504925, AA745297, AL273837, AA972523, AA372311, AL369076, R99613, N40907, AA581240, AA582746, AA559205, AL984168, AA367014, AW008184, F00458, M62257, AA424249, AL299442, AA449468, AA581185, AL016192, AL932871, T62078, AA229422, AA160427, AA484892, W26972, AA515172, AA385775, AA583568, AA372389, AA354695, AA838098, AL003391, N92697, AW194046, AL889426, AA523695, AA582350, AL859744, AA633713, C15362, AA336376, W237905, AA831801, N77384, AA720582, AL915081, AW341955, AA573000, AA482792, W328331, AA302978, AA728911, AA664248, D51809, AA610255, AA419225, AW341882, AA630854, AA502110, AA115865, AW272389, AL223968, AA634991, AW328330, AA488687, AA832016, AA661883, T40550, AA503307, AA354677, AW265888, AW151247, AL154333, AA584765, AA837771, AL146266, AA352521, AA838161, AW249720, T47138, R08409, AL859438, AA427808, AA481811, W02749, AL041895, AA515939, AL123488, F17537, AA669747, AL927275, AA810837, AA425924, AA674098, AA678616, N52276, AA364988, AL537800, AA329535, AL187148, AC005538, AC004098, AC002066,



AIJ33269, AC0050331, U80017, AC004858, AC007637, AC004526, AC004148, AF109907, U02051, AL109952, AL031587, AC004019, Z97630, AC004253, AC007738, AL024509, U62292, L34635, AC005955, AC005989, AL131163, AL133245, L05367, AC005480, AC000064, AL096791, AC005231, AL096766, AL024948, Z83826, AL049776, AC004821, AC003004, AC006537, AC006641, AC005919, AL049636, AC004913, AC001346, AC007551, Z94056, AC004970, AD000092, AC004856, AP000502, AC004131, AC005015, AC002350, AL035079, AL096712, AC007566, AC006263, S42652, Z84722, U63721, AL096703, AC007182, AC000025, AC005666, AC003007, Z98941, AC006276, AL050318, AC002369, M87890, Z96470, AC005611, AC002310, Z68873, AC006344, AC004849, AC007842, AL022315, AC005730, AC005479, AC007436, AC005328, AL021579, AB022785, AC004517, L35532, AC005258, Z49236, AC005837, AL031311, Z85986, U95742, AL135744, AC007421, AL049832, AL034429, AL049540, Z15025, AC005632, D38522, AL008715, Z97053, AP000326, L78833, AP0007686, AB023049, Z84474, AC002477, AP000054, AP000169, AP000122, AC005377, AJ236701, AC006126, AC005332, Z69917, AC007314, AL132987, AC005211, AC005826, AC006254, AC016027, Z84469, AC007435, AC006379, AC004973, AC002306, AC004851, AC004030, AC007860, Z82208, AC003029, AC005180, AC016830, AC003010, AC000075, AC004655, AC004882, AF196971, AL031230, AL022311, AP000512, Z98048, AF134726, AL121838, AC0012627, AP000503, AC005071, AC005839, AC004686, AL049830, AC006132, AC007384, AC007216, AL133243, AP000253, Z81364, AC004663, Z83844, AL035072, AC007225, AL049712, AC005210, AC006388, AF047825, AC009946, AP000691, AC005681, Z85994, AL035685, AC005519, U16302, AL031281, AC006125, AC004542, AC004816, Z93017, U91326, AL031728, AC007226, AF001550, AL133312, AC004811, AC005306, AC004626, AC004802, AC004883, AC004841, AC000070, Z97054, AC003081, AF111169, AC006976, Z83840, AC006285, AP000008, AC004707, AC002045, AC005696, AL021707, AC005200, Z95114, AD000864, AC005763, AC005736, AL121655, AL049757, AC004685, AC006251, AF032368, K01254, AL034421, AC005911, AL109798, AL024474, AC005759, AL049738, AF124523, AL049794, AL031983, AC002300, U62293, AC005280, AP000704, AP000498, Z93848, AC004825, AC003688, AL008718, AC005971, AL031258, AL035658, X54486, Z98026898, AC004859, AC006480, AC002947, AC004662, AC007731, AC005527, AL109967, M17262, and AC005500.	15 - 529	1 - 515	1198 574864	1198
T71420, H65742, R17043, R53388, N19910, AL031295, and AL049675.	15 - 305	1 - 381	1199 840953	1199
R92125, T98334, AL424340, AA632445, and AC004749.	15 - 363	1 - 349	1200 849905	1200
AF001550.	15 - 261	1 - 535	1201 733993	1201
AA488048, AW007822, AC005244, AC004673, AL080241, AC004075, AC002412, AC004388, AL132668, AC005100, AF117829, AL022158, AC004585, Z95152, AL022310, AC004478,	15 - 470	1 - 247	1202 960099	1202
		1 - 456	1203 577896	1203

HCWFXV37	1204	575715	1 - 408	15 - 422	AC000114, AC007680, AC004014, AC007655, AC006313, AC007115, Z80771, and AL035464 N64515
HCWFXV50	1205	572366	1 - 433	15 - 447	AC004007
HCWFXV69	1206	527087	1 - 410	15 - 424	AA911986, and AP001055
HCWFXV51	1207	671807	1 - 493	15 - 507	N51043
HCWFXV23	1208	675902	1 - 332	15 - 346	AL119853, and Z69304
HCWFX30	1209	825920	1 - 322	15 - 336	
HCWFX44	1210	703028	1 - 503	15 - 517	
HCWFXZ30	1211	692719	1 - 310	15 - 324	
HCWFXZ56	1212	733414	1 - 294	15 - 308	
HCWGA27	1213	861968	1 - 325	15 - 339	AI880278, AW276156, AI983646, AA877596, AI887774, AI347477, AI673036, AI458241, and AL022237
HCWGA32	1214	699272	1 - 331	15 - 345	
HCWGB61	1215	733105	1 - 487	15 - 501	L44329
HCWGB64	1216	578734	1 - 158	15 - 172	
HCWGB78	1217	861843	1 - 380	15 - 394	
HCWGC02	1218	917348	1 - 321	15 - 335	
HCWGC50	1219	772358	1 - 399	15 - 413	
HCWGD20	1220	906973	1 - 373	15 - 387	AI636734, AA557982, AA715527, AA715344, AA284247, W02749, W63553, AA715284, AI923360, AA557136, AA742815, AI929298, AI929825, AI120543, AI039930, T47138, AW157180, AI291419, AW403829, AA401921, AI571866, AA219349, AI368873, AC006141, AC004257, AC005317, AC005071, AL031123, L78810, AC004542, AC007216, AP000501, AC007052, AC006449, AC003665, AC005531, Z85987, AC007637, AL008726, AC007546, AF001548, AC007686, AC004821, AL031295, AC005529, AI135744, AC000353, AP000313, AC005911, S45332, Y10196, AC004825, AP000050, AF196779, AI251973, U95740, AC005088, AC004797, AP000117, AF134726, AC006581, AC006211, AC005696, AP000557, AC006946, AC004638, AL050342, AC006130, AC005484, AC000025, Z84718, AC004890, U78027, AL078593, AC003070, AL033375, AC006360, AD000092, AL035422, AC007690, AL049874, AC009516, AL050327, AC005015, AC006251, U91326, U95742, AF045555, AC006241, Z99495, AC002310, AC006480, AC004531, AL031733, AP000350, AC005261, AC020663, Z98884, Z98941, AC006121, AC005081, AC006084, AP000302, AC004820, AC006160, AL109628, AP000558, AC005102, AC006487, AP000352, AC002416, AC004765, AC002425, AC005189, AP000114, AP000046, AL078477, AL035684, AC005920, AC007376, AC005740, AC002544, AC004876, AC010582, AL031680, AP000503, AC002477, AL133246, AC007041, AC005324, AC007880, U47924, AP000065, AC009405, AL022240, AC005027, AC006539, AC004983, AC004832, AC005919, AL031311, AC004815, AC004448, AC003002, AC007738, AC007225,

HCWGD33	1221	849009	1 - 327	15 - 341	AL121655, AC003000, AC004927, AC004933, AC008044, and AC006080.
HCWGD66	1222	496411	1 - 264	15 - 278	
HCWGE12	1223	967067	1 - 364	15 - 378	
HCWGE22	1224	727967	1 - 328	15 - 342	AA330772, AW022897, R79496, AA188940, HI2383, AL0338971, AL1339974, AA370455, AL031584, Z98941, Z97055, AC004815, AC005015, AC004584, AL022165, AC005952, AC004491, AC000134, AC005821, AL003147, AC004876, AC004966, AC005102, AL031276, AC003690, AC007842, AC004552, AC006071, AC006285, AC005280, AC005300, U07563, AL035071, AC002045, AP000692, AL049757, AC002299, AC006953, AC005048, AC008044, AC005527, AP000513, AC004976, AC007151, AC016830, AB023049, AC004526, AL121578, AC005529, AC002470, AC006312, Z85986, AC007993, Z84469, AC002558, AC004638, AC005726, AL031279, AF111168, AC004967, AC004832, AL020997, U91326, AC007541, Z82208, AC004263, AJ229042, AC000025, D84394, AC016025, Z96074, AC005519, AC007041, AL034429, AC007308, Z95115, AC006252, AL031311, AJ251973, AL035659, AC005011, AC004167, AC006251, AL035089, AC005899, AC002544, AL096702, AC002365, Z98946, AC004770, AC006121, AL132712, AC004945, AC007421, AF064861, AC006530, AL031291, AC006946, AC006211, U80017, AC000359, AP000346, AF128525, AP001054, AC000357, AL009181, AL035430, AL009182, AL133500, AL031228, AC005081, AL010770, AF001552, AC008372, AL022722, AC006388, AC006023, Z97053, AC004228, AC002565, U52111, AC006120, AL035681, AC006450, AL049872, AL049636, AL034555, AL035415, Z99128, AL035587, AC006940, AC006115, AC002070, AL022238, AC006324, AC005940, AC016027, AC004687, AP000252, AP000211, AP000133, AP000167, AC004216, Z82201, AP000689, AL008726, AP000558, AC004887, AC005874, AF134471, Z93930, AC005993, AC003108, AC006006, AF038458, AC007676, AC002301, AC006012, Z83178, AC009247, AC006544, Z98304, AL021878, AC004953, AP000031, AL021546, Z83845, AC005180, AL049779, AC005800, AC005480, AP000694, AC002059, and AC004217.
HCWGE23	1225	853004	1 - 453	15 - 467	
HCWGE25	1226	657236	1 - 363	15 - 377	
HCWGE39	1227	705403	1 - 58	15 - 72	AL11654, and AL032916.
HCWGE47	1228	925105	1 - 429	15 - 443	AC004072
HCWGE53	1229	728249	1 - 342	15 - 356	T47041, and AC010385.
HCWGE65	1230	720349	1 - 348	15 - 362	
HCWGE73	1231	757333	1 - 198	15 - 212	
HCWGE78	1232	527557	1 - 325	15 - 339	
HCWGE92	1233	792722	1 - 273	15 - 287	AL117411, AF109126, and X99338.
HCWGF06	1234	935492	1 - 398	15 - 412	

HCWG71	1235	960089	1 - 436	15 - 450	AC008055.
HCWG74	1236	529235	1 - 231	15 - 245	
HCWG75	1237	682351	1 - 347	15 - 361	
HCWG76	1238	752789	1 - 321	15 - 335	AA719214, and AA716020.
HCWG91	1239	754244	1 - 141	15 - 155	
HCWG92	1240	861865	1 - 293	15 - 307	
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HCWG07	1241	849889	1 - 388	15 - 402	
HCWG039	1242	849891	1 - 575	15 - 589	
HCWG062	1243	916454	1 - 349	15 - 363	
HCWG071	1244	710828	1 - 371	15 - 385	N88113, N8562, N86592, AA097643, AA091872, and AA096089
HCWG080	1245	529242	1 - 319	15 - 333	
HCWG084	1246	853106	1 - 388	15 - 402	R51952, and AC003214.
HCWGR34	1247	925577	1 - 363	15 - 377	
HCWGR43	1248	734888	1 - 302	15 - 316	AA513238, AA526630, A1051037, A1243789, A1002810, A1051457, AA329659, AA064815, AA707879, F07155, AA 362988, A1027056, A1002207, W03818, A1581486, T91561, AA657835, AW188427, R22496, R63562, H03144, AA578358, AA328676, AA503407, A1149724, AA297006, AF053356, AC005409, AF001550, AC010205, AC004895, AC001003, AC004851, AC006211, A1078581, A1020997, Z83846, U91318, AC003684, AC007685, AC004821, AC004098, AC005914, AC004796, AC005484, AC005919, A1049869, AC005243, A1133371,

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				AC007684, AC009177.
HCWGR47	1249	719518	1 - 251	T40338, AA657918, AW080134, F16127, F37169, AW265654, AA469451, AA984640, AA704643, AL041368, AL138242, AA491545, AA713767, F29989, AA649642, AL200051, AW023389, AA650434, H65428, AL355206, AA501809, AF061334, AA831388, AA525151, AW406659, AA847128, AA364224, F34795, AA601355, F23249, AA640979, AA156338, F33511, AA678436, AA491814, T63104, N27353, AA533725, AA513939, AA581903, AA649705, AA634238, AA747472, AA714453, A1824562, AA482711, AA310868, A1924251, AA604869, AA654979, AA847753, AA525406, A1963720, AA364315, AA507824, AL601892, M77895, AW104748, AW236342, AA503258, AL043721, AA407307, AA441788, AA310879, AW250970, A1963095, AL303008, W07122, M62272, AA457771, AA318652, A1982651, AA569075, AA470983, A1284640, AW088058, A1471464, F28776, F35673, H64777, AW272758, AA206935, AA604897, AA713534, A1918421, AA235575, AA768905, A1251002, AA708352, A1610159, A1344844, AA749274, A371567, A1471487, N31557, AA515224, AA767376, AA347531, AA644551, A1962050, F27027, A1287651, AA626678, AA702614, AA745560, AA302732, AA644538, AA831599, A1287528, A1792287, AA425932, AA668578, A1653905, A10101689, AA513972, AW265294, AA523810, H22634, AA713762, AA100372, AA652057, AA603323, A1708009, AA713933, A1246796, AA469460, AA578017, AA611851, A1264743, AA573020, AA468022, AA640900, F23315, AA557879, AA369477, A1010920, AA683037, A1281697, AA143477, T49241, AW406447, AA632960, F36404, AA199660, F32808, AL119691.
HCWGR48	1250	690954	1 - 167	
HCWGR69	1251	849946	1 - 422	

AW341900, AA551201, AA635067, AA601876, AA192695, A1270326, AA910125, N55273, AA535937, AA071144, A1471572, AA357987, AA557325, A1160117, AA747480, AA665021, A1523608, H96730, A1061296, AA071393, R96657, A1917271, A1633007, F36273, AA526193, AA746726, AA931647, M37551, Z30994, U22376, U57007, Z30983, X54176, Z31005, Z98885, AF087913, AL049759, AC009263, AC005839, AF015148, AC004887, M87919, M77848, AC007050, AL109839, U91326, X75335, A121655, AC005787, AF015155, Z30979, AF192789, S77605, U14717, AL096701, S75337, AF015152, U02049, U14711, U14712, U14713, J03071, AL079295, AL109628, L44140, AP000556, AC005520, AL117258, AP000552, Z81369, M77849, AF015153, AL034401, AL078581, AF015160, U14708, Z83840, AC005740, M29322, AC020663, AC005280, AC005785, AP000117, AL022316, X67330, AP000553, AL133382, AC0009516, AC006538, AC002544, AC002055, AC000951, I51997, AL031276, AC004890, AL009179, AL031229, AC003688, AL021937, AC002425, AL035535, U47924, AC007160, Z75887, AC003046, D26535, AC004463, S75201, AC005763, AL049697, AC005988, AL080248, AC003353, AC005412, AL035688, AC004263, AC006285, AC006312, AL135744, AL031732, AC004797, AF207550, AC006505, M89651, M87918, AF054569, AC006360, Z32772, AL049757, AC004859, AC007462, AC007731, AC007740, AP001045, AC006441, AC005500, Z98884, AP001052, AF111170, AC006241, AL020989, X06653, AL049829, AC006130, AC005516, AC016025, AC005102, AC004477, AP000357, AC006012, AF180475, AC005399, AC0004139, AL078621, A1011930, AP000272, AC006079, AL096774, X77859, AC005829, Z98030, Z84721, AC009946, AC007537, AC004531, AC005088, AC004224, AC035071, Z49236, AC007488, AC007360, AP000079, AC005527, AC007664, AC000004, AC002301, AL024495, AC006011, AC007382, AC006037, AL022313, AL049576, AC004645, AC002984, AC005921, AC010168, AC005105, Z86004, Z84480, AL049795, AL049569, AL132987, AC004775, AL035410, AC005370, AF015416, AC005355, AC004492, AC005257, AC006252, AF110465, AB023049, AC004808, U14719, AC003104, Z98052, Z75744, AC010582, AL035423, AC005920, AF024533, AC018767, AL034553, AL031255, AC005924, AC007064, AC007057, AC004050, AP000745, AC003109, AB031740, Z84474, Z97053, Z82244, AC005011, U34055, M77847, AL034379, AL008708, AC007676, AL021878, AC011604, AL049699, AL121658, AC005567, U34052, M64231, AF121781, and AL049539.					
HCWGR76	1252	778293	1 - 399	15 - 413	N88601, AA247827, N84855, H58760, N84048, N83993, N84718, U39066, AF039698, AF032922, and S78798.
HCWGR88	1253	736056	1 - 202	15 - 216	
HCWGT45	1254	913730	1 - 691	15 - 705	N53076, T90911, D25951, AA650097, and A1801737.
HCWGT49	1255	527085	1 - 406	15 - 420	
HCWGT66	1256	531374	1 - 448	15 - 462	
HCWGU11	1257	967064	1 - 650	15 - 664	AA913734, AL056453, and AW194191.
HCWGU49	1258	674752	1 - 227	15 - 241	AA947385, AA468583, and AC005214.

HCW/GU57	1259	705637	1 - 117	15 - 131	A1078214, H77522, and A1052167.
HCW/GU86	1260	660943	1 - 295	15 - 309	
HCW/GW10	1261	935865	1 - 382	15 - 396	AC004590.
HCW/GW12	1262	964088	1 - 426	15 - 440	N56555, N88601, AA093861, AA247827, N84048, N8393, N84855, N87989, AF045432, AJ243486, AU48696, AF039698, and AF032922.
HCW/GW13	1263	849911	1 - 395	15 - 409	
HCW/GW32	1264	615553	1 - 448	15 - 462	Z69705, and AC004754.
HCW/GW63	1265	745091	1 - 57	15 - 71	W07329, A1638772, A1766112, AA947305, A1684857, AF086142, and AF086126.
HCW/GW80	1266	742103	1 - 153	15 - 167	
HCW/GW85	1267	556369	1 - 265	15 - 279	
HCW/GW86	1268	785506	1 - 330	15 - 344	AA584167, AA747070, A1345157, AA580808, AA493695, R95139, AW075948, AA847499, AA468022, AW275510, AA501762, AW193265, AW438643, AW302903, AW249224, AW577959, A1873852, A1042753, A1873990, AA478355, AW149313, A1872020, A1247199, AA483771, A1754658, A1350211, A1687343, AW274349, AA662225, A1583283, A1696962, AA531079, A1048925, A1866013, AA808877, AA724333, AW303196, A1040342, A1038072, AA679532, AA224083, AA515999, AW303002, A1567076, N35602, AA507824, A1133297, AA568869, AA515334, AA847952, A1613280, AA961035, AA468456, A1270117, AW002350, A1471887, AA321168, AA490183, AA333638, AA428792, AA524821, AA369254, N29815, AW301350, A1305766, A1972203, A1584186, AW069769, AA912099, A1932493, AA664909, AA857486, AA683258, A1281881, A1284640, AA613345, AW264934, AA504877, AA588001, AA838749, A1801482, AA169263, AW023990, AW103758, AA634889, AA502860, A1608668, AW235497, AA483223, AA224525, AW276817, AA581903, AA661921, A1054343, AW327868, A1963720, A1120933, A1046205, A1041690, AW270709, AA584082, A1042853, A1634384, A1865905, AA653375, A1368256, AA469451, AW083402, AA623002, A1783494, AW270382, AA938105, A1733755, A1933534, AA812281, AA483929, AA019312, AA577906, AA584581, AW419262, A1042547, AW083364, AA167055, AA576336, AA581123, AA610491, A1434706, AA579179, A1744095, AA682912, AA639326, A1654525, AW274346, A1866160, A1431303, AA579075, A1345654, AA719292, AA658362, AA788901, AW248803, A1445674, AA523837, AA720702, A1816141, A1002510, A1120927, A158431, A1118991, C16397, AA846876, AA220943, AA613397, A1046409, AA192740, A1133164, AA178953, T06648, AA534792, A1110844, AA715255, T74382, AA715267, AA848134, A1120269, A1824706, A1698447, A1085719, AA478297, A1040130, A1093030, AA533762, AA584667, A1640841, R35746, AA380354, AW276710, AA745406, AA578997, A1470646, AA650376, AA581076, AA601270, A1063390, AW275971, AW301809, A1580250, A1241821, T51911, AA503015, AW118539, R02632, AA126777, AA747480, AA326372, AA533333, A1254913, H71429, A1708009, AA631507, AW168618, A1636730, AA480784, AF034184, A1119713, AW050498, Z84482, AC005028, AC002549, AC006155, AC004620, A1022329, AC005375, A1117356, A1021408, AC005768.

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HCWG95 1269	958780	1 - 451	15 - 465		
HCWG95 1270	902512	1 - 1076	15 - 1090		



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HCWG323	1271	720486	1 - 312	15 - 326	AC004033, AC007731, and AC005500.
HCWG341	1272	849887	1 - 343	15 - 357	C18732, AA63486, AA729161, and AA729860.
HCWG358	1273	920693	1 - 743	15 - 757	
HCWG368	1274	733413	1 - 115	15 - 129	Z95115, AC004491, AC005089, AL049843, and AC004973.
HCWG382	1275	924102	1 - 274	15 - 288	
HCWG394	1276	793197	1 - 170	15 - 184	
HCWG402	1277	920113	1 - 348	15 - 362	
HCWG403	1278	924208	1 - 251	15 - 265	AI183881, AW014092, AI085895, and AC007245.
HCWG412	1279	970693	1 - 324	15 - 338	
HCWG420	1280	660717	1 - 311	15 - 325	
HCWG433	1281	702441	1 - 476	15 - 490	AA618172, AA632695, AL031681, AC004699, AC002565, AL133353, AL033403, AC004383, AC005562, and AC004128.
HCWG443	1282	660568	1 - 228	15 - 242	AA716190, AA515438, AA614340, AA618172, AA632695, AI168274, AA760672, AA174138, AA135377, AA348966, T68597, AI735455, D44625, AA260628, AA747322, HI7731, AL042425, AA809631, R98945, AW449193, AA226172, AA226173, H59461, AA468491, AA468952, T96546, AI734154, AI732760, AI124595, AA37927, AI240831, AI890794, R54247, R18870, R22698, AA551582, AC006511, AC004129, AF047825, AL031685, AC011331, AD000092, AC005086, AC002070, AL023096, AL031297, AC005495, AC005844, AC004984, AL034379, Z82173, AL034553, AL020997, AL031680, AC007686, AC008134, AL049653, AC005899, AC002044, AP001053, AP000349, AC005082, AC002994, AL031178, AL021937, AL031681, AC007790, AL049575, AC004552, AC007277, AC006501, AP001068, AI011930, AF121781, AC005609, AP000350, AL135879, AL121790, AC005280, AC005189, AL133238, AD000813, Z84466, AF001549, AC002132, AL133396, AL049844, AL035461, AL035070, AC002112, AC005620, AC006966, AL031670, AC004616, AL035703, AC009178, AL121652, AF196969, AC004079, AC001226, AF111169, AL049830, AC005003, AC005262, AB020863, Z82203, AC004098, AC004491, AP001059, AC004525, AC004682, AC009509, AP000502, AF134726, AF196972, AL133483, Z92542, AF002223, AC006160, AC004143, AF067845, and Z98304.
HCWG464	1283	670896	1 - 233	15 - 247	AW020871.
HCWG467	1284	861886	1 - 320	15 - 334	
HCWG476	1285	496402	1 - 322	15 - 336	
HCWG485	1286	917132	1 - 338	15 - 352	
HCWG486	1287	711312	1 - 459	15 - 473	
HCWG490	1288	960159	1 - 250	15 - 264	
HCWHA03	1289	924189	1 - 136	15 - 151	AC006468.
HCWHA09	1290	968274	1 - 157	15 - 171	AC003689.
HCWHA10	1291	961278	1 - 376	15 - 390	AA551798, IP91611, AI933638, AA593537, AA229422, T05118, AA578832, AI801649,



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AL122003.					
HCWHA84	1294	733421	1 - 306	15 - 320	
HCWHB12	1295	970688	1 - 366	15 - 380	
HCWHB32	1296	966908	1 - 411	15 - 425	

HCWHB65	1297	711437	1 - 122	15 - 136	
HCWHB68	1298	575571	1 - 317	15 - 331	
HCWHC01	1299	849886	1 - 320	15 - 334	AW117951, N64437, AA345333, N66776, AA508509, AA669416, AA724230, A1432270, AW439480, A1358343, AW193546, A1570822, A120502, AW243706, A1252085, R44592, Z83840, U85195, AE000658, A1109628, A1011930, AC006449, AC005089, A1022163, A1022326, A1022238, L44140, AC000353, AC006374, A1020997, A1021707, AF196969, AF117829, AC004491, AC002381, AC002400, AC005046, AC007666, AC004671, A1049830, A1031577, AC000085, AC002299, A1135744, AC005332, AC006211, A1211655, A1049874, AC004000, A1023807, AC005288, AC005826, AC004003, A1096701, AC007243, AC006312, AC006270, A1033525, AF042090, AC006379, AC006501, A1031737, AC020663, AP000509, U95740, AC006116, AC006285, AC004941, AF109907, AC005529, AC004895, A129321, AP000514, A1246003, AC006530, AC007676, AC005212, AC004678, AP000311, A1023799, A1023281, A1216538, A1031120, U52112, AC005231, A1008718, A1034421, AC003663, AC006023, A121652, A1035458, AC008126, AC005057, AC007277, AC004859, A1022720, AC000025, A109847, A113312, A1049745, AC005694, AB020868, AC002472, AC005527, AD001527, U47924, A1031668, AC002351, and A1049759.
HCWHC26	1300	950719	1 - 420	15 - 434	A1460404, AA348929, AA523824, AA503454, A1832909, AA192470, A1068626, A1436677, F19716, A1625647, A1589461, AA669251, AA545894, A1559251, N43757, C05755, AA451612, C06327, F10924, A1190911, AA446544, AA848172, A1472222, A1889781, U51696, AA338486, A1038703, AA652940, H64560, AA668639, AA744075, AA085124, A1064864, AA528519, AA074130, R78962, A1301713, A1359958, A1699134, A1243452, A1067900, R79263, A1692808, A1696998, F28576, AA347368, A121505, A1357698, H60143, AA533450, AA669416, AA181823, W05405, AW302013, N92446, A1119984, AA954936, A1568678, A1569306, A1921649, A1969436, AA837677, A1182038, AA648064, AA630352, N95554, A1679132, A1376100, A1569086, AA303845, A147197, A117750, H85382, AA834820, T11542, A1798473, AA492252, AA480784, AA528516, AA886584, A1629992, A10704059, A4443138, A1356904, A1564284, C06119, T56719, AC005288, U18396, M57427, A1008715, AC007225, AC008115, AP000503, A132777, AC006285, A121658, AC016025, AC004226, AC007240, AC004895, A134726, AC005879, AP000552, A133445, A1080243, AC005231, A1049869, U57004, AF067844, A172277, A1008582, AC002350, A1133448, AP000347, A1122020, Z83840, A1049872, A1049636, AF088219, AC003043, AC007226, AC005730, AC003969, AC005999, AC005412, A117356, AF165926, AC005048, A1050312, AC004853, AC002550, A1239318, AP000042, AC003966, A1050341, AC005527, X06123, A1109802, AF090944, AC005488, AC000353, AC007676, AC005632, AC005529, AC004019, AC006449, A1021579, A1035460, A109653, AC000025, A121578, AC007546, A1006996, L490046, AP000496, AC006359, A1021368, AP000497, Z69918, AC004813, AC003013, AF015723, AC002316, AF114156, AC006211, A1009174, A1021940, AC002543, X61109, AP01138, Z99716, Z97876,

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					AL125214, H78331, N63856, and AA702824.
					AA019537, D58283, D80195, D80391, D51423, D59619, D80210, D51799, D80240, D80253, D80227, D80196, D80188, T03269, D80219, D59927, D80043, D80212, D81030, D80038, D80193, D80366, D80022, D59889, D80166, D80378, D59859, D59275, D80269, C14429, C14014, D80045, C75259, D80168, D80134, D59502, F13647, D80949, C14227, D59747, D80241, D59610, D81111, D58253, D51079, AW178775, AW377671, AW352158, D51097, AW360844, AW178971, AW177714, AW352171, AW179007, AW178754, AW179024, AW179020, AW177456, AW377676, AW179012, AW352174, D80290, A1557774, T11051, AW178986, AA033512, AA285331, H67858, A1525907, A62300, A62298, X67155, A67220, A84916, A25909, D26022, D34614, A1132110, A78862, D89785, AR025027, Y17188, D88547, X68127, I82448, A85396, AR066482, AB010386, AB012117, X93549, A85477, U87250, A86792, I19525, A44171, AF135125, AR064240, Z33749, S69292, I18371, X89963, A45601, S78799, and AB033111.
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					AC005591.

HCWHF62 HCWHF85	1309	582472	1 - 429	15 - 443	H66222, R16430, and T99465
	1310	746745	1 - 305	15 - 319	H95605, T05617, A1630894, AA587113, AA456042, AA430652, A1918575, AL048479, AW316599, A1866377, R01574, AA223907, A1633386, AA830070, A1567391, AA021354, F30586, AA054170, A1653776, AA515129, A1336398, AW337805, A1967114, A1962030, N04807, H97510, F35689, A1905408, AW238212, AA018617, A8838192, A1921765, AA214227, AW082104, AL096701, AC005280, AC016027, AC016830, AF047825, Z584669, AF056405, AL031651, AL035458, AC004150, AL031447, AP000962, AC004983, AC000024, D87011, AF124523, AC004821, AD000684, AC006121, AC002394, AC004253, AC005482, AL109798, AL132774, AC006130, Z68165, AL049766, AC002425, AL132987, Z97056, AC003003, AL035400, AC0031681, AL034420, AC006512, Z82193, AL033527, AC004477, AC007308, AL049713, AC005881, AC002551, AL031577, AP000503, AC005736, AC007070, AF165926, AC007225, AF084941, AC002511, AL031659, AC005874, AF134471, AF134726, AC005011, AC006441, AC006552, AC007536, AR036572, U91328, Z85987, AC004605, AC004259, Y11107, AL008707, AC006946, AC004600, AL031685, AL024498, AC007191, AF196972, AC006241, AC006023, AF064861, AC004554, AC006536, AC000052, AL031680, AC003982, AC002470, AC002300, AC005410, AL049777, AC004019, Z85986, AF111170, AC004938, Z94801, AL023575, AC005089, AL022336, AC005048, AC005837, U91323, AL096712, AC004031, AL049540, AL049765, AC000120, Z98051, AL049760, AL031431, AC004616, AC006312, U95090, AC004386, AC002314, AL008718, AC005368, Z75890, AC004643, AL110292, AF109907, AC003043, AC007381, Z98200, AL031596, AC005037, AF048729, AF001550, AC007731, AC005726, AC005500, AC004858, AC003108, AF118808, AC004491, AF015416, AC006487, AC005225, AP000555, AC005856, AC006115, AC007052, AP000365, AL109758, AC005091, AC002430, AC000003, AC0005920, AP000303, AC004851, AC004878, L17395, AL011930, AC006509, Z73417, AC006338, and AC020663.
HCWHJ15 HCWHJ25	1311	968379	1 - 129	15 - 143	AC009248
	1312	686712	1 - 340	15 - 354	AA488432, AA4879225, AA458804, AA364315, A1744739, AL041706, A1053644, AA362917, AA52875, AA720702, F28122, H57509, AA654908, AA146625, F33121, AA603062, AA888870, A1051230, A1056964, R09168, R77905, A1460390, AC007387, U95090, AL109654, AL135783, S41998, AC006536, AC007057, AL049872, AP000556, AC011592, AC000451, AP000552, Z85986, AF109907, AP000275, AC002350, AP000105, AP000037, AC006130, AC005694, AC006057, AC004858, AL117338, AC005527, AC004659, AL109984, AC000085, AC006121, AC008134, AL021394, AL031005, AL110502, AC004531, AL035458, L44140, AC005512, AP000692, AC000052, AC007537, AC007363, AC006285, AC006502, AL034451, AC004601, AL135879, AL121790, AC005529, AC002289, AC006277, AP000307, AL022329, AL094702, AC002288, AL133448, AC011587, AC002448, AP000115, AL022316, AL020993, AC007011, AL049797, AC007536, AL023320, AL121653, AL021878, AC005324, AL13382, AF042090, AC001226, AC005330, AL096701, AL021453, AC008064, AL022726, AC006255, AL050323,

HCWH48	1313	721816	1 - 340	15 - 354	AL049843, AC0006512, AL050318, AF061779, AL022238, AP000114, and AP000046.
HCWH53	1314	693313	1 - 411	15 - 425	AC008101, AC008079, AC016027, and AC016810 AA344959, AA831388, AA526193, AW408063, AA483043, AA365571, AA505700, AA302952, AA301813, AL249688, W07122, T41134, AA327572, H12972, AA063426, AA744025, AA516225, AA341120, AP963720, AL355206, R66407, AW019904, AL754105, AA702206, AL198376, AA227162, H59856, AA720746, AU038304, AA610491, AA384039, AA847029, AA737150, AL754567, AL569100, AW192599, AA368329, AL755214, AL044400, AL708005, AL061313, AL928790, AA365520, AL569510, AL244356, AL080307, AL678392, AL624698, AA594725, AL281431, AW131356, AA804993, AA828704, AL912322, AA579184, AL747889, NS4179, AA298387, H65439, AL886365, AA526755, AW265656, AL021317, NS5476, D58782, AA364315, AA757743, AL860020, AA838479, T57604, H72666, C05999, AA383477, AL1889794, AA633175, AL120343, AL049795, AC005399, AC004983, AL121653, AL021808, AC005225, Z69921, AC004797, AL132987, AC006459, AP000214, U02057, AL035071, AL049776, AL033392, AF165926, AC007216, AF111168, AC004910, AC005104, AL022320, AL008630, AC005252, AF109907, AC005089, D83737, AL121657, AL023803, AC004460, AL008630, AC004890, AC003101, AC002425, AC002377, AC004470, AL031846, AL031296, AC005231, AC005874, AF134471, AC007738, AC000353, AP000255, AC006312, AF129756, AC020663, AP000354, AC007227, AL049766, AC004400, AF001549, AP000105, AP000037, AP000031, AC004854, AF196969, AC005071, AC007371, AL021158, AC004972, AC006538, AC006047, AC002523, M87914, AC005081, AP000135, U89337, Z93244, AC005772, AC006041, AC005899, M87918, AL022238, AP000692, AC004496, AC003108, Z98050, L78833, AF026069, AP000555, AB017602, AC011362, AC006077, AL031729, Z99128, AP000689, AL031255, AL080243, AF019413, U57007, AL023807, AC004019, AC006111, AL050318, AC005520, AC004463, AC006285, AC002400, AL078639, AC007285, AC007225, AC004259, AC007546, AP000513, AC004812, AC004600, AL034420, AC016025, AF196779, Z97055, AP000509, AP0000251, AL034429, AC004216, Z99496, AC006271, AL031005, AC005796, AB015355, AL109759, AC004605, AC004929, AF045555, AC004859, AL049761, AC004841, AC004821, AC006953, AC007263, AL035415, AC007537, AC000052, AL049709, AC005393, AC005839, AC002553, U63630, AC007899, AB023049, AF053356, AC004770, Z93017, AP000141, AP0000389, AC004408, AC007308, U07563, AC004066, AL035072, AL121603, AL022125, AC006160, AC005588, AC004585, AC004477, AL034417, AC002126, AL035681, AL121655, AC005768, AC002470, AL035587, AL035448, Z92540, AL023574, AC002997, U73638, AC004973, Z83826, AC002115, AP000512, AC006468, AC002404, AC003070, U66060, AP000211, AP000133, AP000030, U02058, U66061, AC007160, AC003104, AC007533, AC002542, AL109758, Z82176, AL008721, AL049760, D26067, AC007064, AL121825, AL027688, AC007063, AP000009, AC006138, AC004802, AP000695, L78810, AC006059, AP000688, AL031428, AC004195, AC007666, AF207550, U91326, AP000350, AC005940, AC004242, AC005747,



HCWHJ55	1315	861884	1 - 719	15 - 733	AC006515, AF015155, Z98048, AP000556, AF067844, AC005668, AC004211, AP000275, AL035659, AL035405, AC005146, AC005170, AL034401, AC006013, AC002985, AC004383, AL021977, AL0409713, AL136504, AC005207, AL133485, AC005539, AC004858, AC004771, AC004918, AL049036, and AC005837.
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HCWH175	1316	786019	1 - 398	15 - 412

AA521323, AI358343, AA747276, AI783494, AA984708, AI355206, AA503015, N27584, AI044940, AW261871, AI696793, AI801600, AI471572, AA526787, AI251436, AI669453, AI699503, AA538472, AI623720, AI298710, AW079135, AI048925, AA072923, AA521399, AW408717, AI568678, AI085719, AI143242, AI079645, C05986, AA584201, AI8090923, AI053790, U51696, AI718446, AI755214, AI917271, AI251002, AI357551, AI951889, AA877817, AI379719, AI289067, AI799042, AW062724, AW265009, AI037683, AI821271, AI020092, AI699648, AI299050, AI754567, AA491284, AA669840, AI042420, AI610376, AI733856, AA623002, AI951928, AI357288, AA846876, AI754105, AI341664, AI859742, AI070882, AI344844, AI956131, AI890918, AI623696, AA806796, AI571512, AI0404205, AI301549, AI046898, AA714453, AI040130, AI307608, AI885572, AI634187, AI688846, AI041690, AW088202, C05755, AI589230, AW339687, AI919265, N35896, AW304584, W79504, AI793432, AA661948, AI037850, AA525190, AA513141, AI679045, AI307201, AA164251, AW089322, AA630362, AA468022, AW271904, AA908687, AI370878, AW072587, H71429, AA584148, AA613227, AI133102, AA493708, AI564185, AI475569, AW276817, AI375710, AA768905, AI039790, AA653618, AI434695, AI286356, AI340453, AF060568, AC001234, AI109758, AF038458, AI096701, S75201, AC007919, AI078581, AF015160, AF134726, AC004650, AF015148, AI035552, D83989, I51997, AF015167, U12584, U12580, AC007934, AI031670, X54180, AF015151, U57007, AI122903, U02531, AC007051, AF015156, AI132712, AC005484, AP000503, U18395, AF015158, AF077038, M37551, AP000114, AF015152, U66059, AR036572, U91328, U18396, AI022721, AI121652, AC003029, U18393, AF015149, U12582, AC005907, AC005529, AI021937, AI136295, U57009, U18391, U18394, U11309, AI031286, AC007786, Z84814, U60660, X55925, AC004884, AF015157, Z94801, U02532, X55926, X53550, AI132800, AC005535, X75335, U57005, U67221, AC005696, AC008101, U57006, AI031681, U18398, AC002463, AC006548, U18392, AC016830, AI031584, X74558, AC007298, AC005215, AI031777, AI049552, X54175, AI031228, AP000513, AC004895, AC007043, AC004832, AC006277, AI021155, AP000497, X54181, AP000557, X54178, AI035587, AI022147, AI17258, AC006138, AI121694, AC007731, AI035072, AC005500, U75931, AF001552, X55924, AI035413, AC005523, AF015166, AF015153, AC0071549, AF015147, U57004, AC004945, AC005768, AC006450, AC002038, AI050318, U18399, X54176, Z83840, AC005406, X54177, AC006120, Y18000, AC006480, AI049829, U18387, AC000353, AC004975, AC006026, U03115, Z95116, AI078463, AI023882, AC004408, U57008, X55932, AI133371, AC006205, AI008728, U80017, U78833, AC005632, Z49816, AI008718, AP000244, AC005482, AI024509, X55931, AI035411, AC005529, AC004019, AC002531, AC005387, AI031050, AI110502, AC005548, AC004963, AC004491, AC006292, AC005839, AC004637, AC007326, U47924, AC004381, AI049766, M87919, AC004638, AC022517, AF015170, AC002430, AC007488, AC007510, Z97183, AC007193, AI211781, AI023284, AB023052, AP000359, AC004799, AC006203, AF190465, AC007384, AC004152, AC005046, AC007514, AC004592, AI022323,				
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HCWHL091	1317	674157	1 - 400	15 - 414	AC005605, AC004908, and AC005604.
HCWHL11	1318	967057	1 - 403	15 - 417	
HCWHL36	1319	465250	1 - 481	15 - 495	W72636, and AA737484.
HCWHL42	1320	959894	1 - 422	15 - 436	AI280574, AI554725, AI436330, AA477517, AA533054, AA213590, AW150387, AA659832, AL040374, T78072, AA663074, AI049931, AC008127, AC013417, AC005726, AC005488, AP000008, AP000704, AC006486, AL022329, AL13396, AF031078, AC006014, AF030876, U73167, U90094, AL008635, AC005924, AL031255, AL035697, AL109758, AC004477, AC007687, Z97053, AC004797, AL031597, AC003665, AC005873, Z92546, Z83844, AL031284, AC002301, AC007899, AL121654, AL133448, AC000035, AC005383, AC003962, AC000044, AL035079, AC005237, AC000034, AC004448, AP000353, AC002425, AC006143, Z82190, AL135783, Z84572, AC008055, AF205588, AC002352, AC004813, AF179633, AL022326, and AC005529.
HCWHL73	1321	960097	1 - 539	15 - 553	AA219247.
HCWHL89	1322	754087	1 - 127	15 - 141	
HCWHLN05	1323	849885	1 - 363	15 - 377	
HCWHLN28	1324	529654	1 - 318	15 - 332	
HCWHL038	1325	573533	1 - 413	15 - 427	
HCWHL045	1326	717807	1 - 436	15 - 450	
HCWHL078	1327	960180	1 - 337	15 - 351	
HCWHL093	1328	924109	1 - 381	15 - 395	AL121852.
HCWHL096	1329	935483	1 - 288	15 - 302	AA729468, R10107, W89152, AA383903, W88647, AI910620, AI241829, AA348884, AI473501, AI538106, N779886, W67486, AW198103, H54411, AA320684, N73349, W67485, AI532089, H67251, R99079, AI362519, AA054355, AA583390, AI654404, AA831624, H71523, T83076, R09897, AI149238, AA767864, T95920, AI032114, AI061577, AA045892, AA491889, R34073, AI884375, AI267544, AA515929, W87421, AA297443, AA077228, AI472070, AI479070, AI287788, AA831638, AI824558, AA655007, H12182, AI004220, AA100325, AI2175725, AA651647, AW338697, F07225, AI523875, T89763, AI808173, AI125633, AA582060, AA745570, AA311509, AA669734, AI559178, AA547979, AW051628, AA176125, AA363250,

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AA203553, AA004349, AA678315, AA507179, R08030, R08080, and AW366361.	15 - 638	15 - 382	15 - 114	15 - 300	15 - 423	15 - 441	15 - 347	15 - 416	15 - 439	15 - 626	15 - 374	15 - 572	15 - 331	15 - 359
AA702353, AC007199, AL10456, and AA326002.	15 - 382	15 - 382	15 - 114	15 - 300	15 - 423	15 - 441	15 - 347	15 - 416	15 - 439	15 - 626	15 - 374	15 - 572	15 - 331	15 - 359
AA702353, AC007199, AL10456, and AA326002.	15 - 382	15 - 382	15 - 114	15 - 300	15 - 423	15 - 441	15 - 347	15 - 416	15 - 439	15 - 626	15 - 374	15 - 572	15 - 331	15 - 359
AA702353, AC007199, AL10456, and AA326002.	15 - 382	15 - 382	15 - 114	15 - 300	15 - 423	15 - 441	15 - 347	15 - 416	15 - 439	15 - 626	15 - 374	15 - 572	15 - 331	15 - 359
AA702353, AC007199, AL10456, and AA326002.	15 - 382	15 - 382	15 - 114	15 - 300	15 - 423	15 - 441	15 - 347	15 - 416	15 - 439	15 - 626	15 - 374	15 - 572	15 - 331	15 - 359
AA702353, AC007199, AL10456, and AA326002.	15 - 382	15 - 382	15 - 114	15 - 300	15 - 423	15 - 441	15 - 347	15 - 416	15 - 439	15 - 626	15 - 374	15 - 572	15 - 331	15 - 359
AA702353, AC007199, AL10456, and AA326002.	15 - 382	15 - 382	15 - 114	15 - 300	15 - 423	15 - 441	15 - 347	15 - 416	15 - 439	15 - 626	15 - 374	15 - 572	15 - 331	15 - 359
AA702353, AC007199, AL10456, and AA326002.	15 - 382	15 - 382	15 - 114	15 - 300	15 - 423	15 - 441	15 - 347	15 - 416	15 - 439	15 - 626	15 - 374	15 - 572	15 - 331	15 - 359
AA702353, AC007199, AL10456, and AA326002.	15 - 382	15 - 382	15 - 114	15 - 300	15 - 423	15 - 441	15 - 347	15 - 416	15 - 439	15 - 626	15 - 374	15 - 572	15 - 331	15 - 359
AA702353, AC007199, AL10456, and AA326002.	15 - 382	15 - 382	15 - 114	15 - 300	15 - 423	15 - 441	15 - 347	15 - 416	15 - 439	15 - 626	15 - 374	15 - 572	15 - 331	15 - 359
AA702353, AC007199, AL10456, and AA326002.	15 - 382	15 - 382	15 - 114	15 - 300	15 - 423	15 - 441	15 - 347	15 - 416	15 - 439	15 - 626	15 - 374	15 - 572	15 - 331	15 - 359
AA702353, AC007199, AL10456, and AA326002.	15 - 382	15 - 382	15 - 114	15 - 300	15 - 423	15 - 441	15 - 347	15 - 416	15 - 439	15 - 626	15 - 374	15 - 572	1	

HCWHS13	1344	657230	1 - 256	15 - 270
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		1 - 309	15 - 351	AC004854.
		1 - 337	15 - 489	
		1 - 475	15 - 367	AC004542, AL049694, AC006112, AL121694, and Z84474.
		1 - 353	15 - 334	
		1 - 320	15 - 344	AB033063, and AR065869.
		1 - 330	15 - 406	N88601, N84855, AA095359, H58760, AA096046, N89520, N83168, AA247964, N83992, AA247827, N83991, N88782, N84048, AA093224, AA096066, AA095641, N84830, N84718, N86694, N87989, AA471338, N55608, N84712, N83993, N88518, N84829, N88496, N87898, AF102850, AF039698, AR066487, AF103726, S78798, U48696, AF045432, U39066, AF032922, and A1243486.
		1 - 392		AL1075000, AL049869, AL109623, AC005680, AC004685, AC005233, AC004014, AC000097, AC006547, AC005187, AC007021, and AL035665.
		1 - 306	15 - 177	
			15 - 145	
			15 - 323	
		1 - 254	15 - 268	AW243834, A1014798, AL132671, A1590042, and A1679747.

HCWHV18	1357	466511	1 - 329	15 - 343	T80701, and AL034551.
HCWHV28	1358	686710	1 - 522	15 - 536	
HCWHV33	1359	702437	1 - 243	15 - 257	
HCWHV41	1360	960157	1 - 331	15 - 345	
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HCWHV61	1361	849983	1 - 410	15 - 424	AA059296.
HCWHV64	1362	770049	1 - 407	15 - 421	
HCWHV66	1363	923527	1 - 505	15 - 519	
HCWHV71	1364	917274	1 - 489	15 - 503	
HCWHV94	1365	953379	1 - 360	15 - 374	



HCWHW32	1366	861905	1 - 546	15 - 560	AA629679, AF111168, AF207550, AF000501, and AF111167.
HCWHW38	1367	722213	1 - 286	15 - 300	AW023111, AA333054, AL048002, AI281818, H71678, AW150387, AW151247, AA069729, AI791659, AA515728, AW237905, H69523, AA706495, AI742168, AA315361, AA727906, H29914, AH40259, AI192440, AW245354, AA984920, AA601728, AA584756, AA284247, AW104163, AL040374, AW265688, AA837035, AI110464, AI821931, AP000210, AP000132, AP000248, AC003962, AC010170, AL049589, AP000030, AL133246, U91321, AC004966, AC004938, AL035400, AC005921, AC007308, AL134477, AP000503, AC007052, AL080317, AC000353, AL096791, U95090, AF134726, AL035071, AL035405, AC006515, AC009516, AL021546, AC006965, AI003147, AC006312, AC003684, AL117258, AC005318, AL021069, AC004797, AB000882, AC005046, AF047825, Z83826, AL1108730, AC007546, AC0064581, AF001548, AC004764, AC006468, AF129756, AC004890, AP000512, AC005231, AC004605, AP000692, AC002310, AC007690, AL031427, AC006480, AL031668, AF001550, AF109907, AL022322, AP000557, AL022171, AC004881, AL117694, AP000038, AC002404, AC005086, AL024498, AC004156, AL035089, AC004882, AC003108, Z83308, AC005529, U52112, AC008040, AC006455, AL031428, Z85987, AP000350, AF064861, Z98946, U50871, Z82189, AL035681, Z82215, AC005527, AC008055, AC006285, AL008729, AL022318, AC016025, AC005288, AC005666, AP000311, AC020663, AL109627, AC008372, AC002477, AC005722, AC003038, AC007057, AL049872, AL096766, AP000558, AC006130, AL133243, AC005907, AC005513, AC005914, AC005015, U47924, AC004686, AL031255, AC004000, AL049775, AC004228, AC004253, AF117829, AC006023, Z82201, AC005736, AC006571, X55448, AL024507, AC006080, AF155238, AL049843, AC006449, AC004525, AC004796, AC004656, AC007450, AD000812, AP000049, AL049694, AP000553, AC006262, AP000251, AC004143, Y10196, AC005971, AC005777, AL023575, AL132642, AP000113, AP000045, AL021707, AL050305, AC006441, AC005180, AC007172, AL035683, AL021808, AP000212, AP000134, AC002375, AC004601, L44140, AC004585, AC004832, AC007376, AL021807, AC002126, AC005684, AP000355, AL035079, AC004491, AC007999, AL034548, AC004887, AL034420, AF139813, AC005220, AP000208, AC006121, AL096701, AC006111, AC002301, U52111, AC006208, AC004131, AL021155, AP000247, AC004662, AC007536, AC006317, AL031588, AC005839, AC007537, AC004883, AC004263, AL049869, AC005070, AL022313, AL035086, Z97876, Z97353, AC007055, AC005516, AC005412, AL035420, AC002045, AP000359, Z95114, U95740, AC005229, Z83838, Z85986, AC005740, AC003042, AC005632, AC007292, AC007226, AC006271, AL035684, AL031311, AC005484, U91326, AC004125, AL022476, AL031663, Z93241, AC005874, AF134471, AL031133, AL049636, AC005899, AC007541, AC007845, AB026898, AL035697, AC007242, and AP000488.
HCWHX08	1369	959456	1 - 439	15 - 453	AA605123, AB63720, AI962516, F18638, AA482711, AI061334, AI352078, AI344844, AA493219, AI355206, AI962050, AA843450, AI921649, N43757, AA829106, AI624698,

AA489775, C06327, AA828704, AA581903, AW023672, AA302103, AA665330, AI860020, AA226305, N54894, E30933, AI017415, AA503015, AI138265, AI376100, AI042853, AW242109, AW303196, AW274349, AI053623, AI956124, AA661948, C05755, AA621704, AW301350, AA468022, AI904894, AI564284, AA3348929, AA3369477, AI356904, AI305766, AI431303, AH53383, AA310158, AI567076, AW074059, AA369477, AI356904, AI305766, AI431303, AI51261, AI732120, AI061296, AA483771, AI547286, AW193265, H13757, AA826303, AA714453, AW247819, AI619997, AI053489, AA542991, AW080134, AI890928, AA810318, AA525824, AW021747, N25303, AW276817, AI037554, AA252763, AA302963, F23867, T90692, AA649642, AI434311, AI061143, H78195, AA132833, AA603445, AA069118, AW193432, AI688846, AW102849, U57007, AF015160, AF015153, A39972, AF015155, AF165926, Z30979, AF015167, AF015148, AC005081, AI023879, AF090940, AC009247, AC006350, AC007216, AC000081, AC004887, AP002248, AC006057, AF068862, U12580, AC007735, AC005944, AI121658, AC006077, AC004647, AC004150, U18396, AC006547, AC004895, AC004797, AF015166, AI246003, AC002378, AP000553, AC002425, AC004678, AC002544, AF015170, AI080243, AC006538, AC006019, AF196779, AF015158, AC010206, AB023049, U18395, AC002115, AC004812, AC006312, AI031846, U73634, AC006571, AC004668, X55926, U18398, AC004913, AI121655, AI022721, AC005004, AD001527, AC011311, AF069508, AC006040, L35531, AI021546, Z69921, AC016025, AI133245, AC004903, AF017257, U57009, U91326, AF024533, AF114156, AC005231, U95742, AC006449, AI132992, U47924, AP001052, AC005037, AC006111, AC006254, AC003104, U57005, AI135744, AC005280, AI121603, AC020663, U85195, AC009516, AI022326, U109907, U67234, AF015162, AI050321, AI023494, AC002301, AI034549, AC005412, AC006241, AC006486, AC007546, AI022329, AI023553, U18394, AI133246, AP000517, U12582, AI049757, AF088219, AC005212, AI035659, AE000658, AI031685, AI109627, AI035587, X54180, U18391, X55925, X54176, AC002310, AC003041, AC007676, AI031650, AC006285, AC004771, AI031281, AC006251, AC002369, AC006088, AI049776, Z95114, AC007536, AI022320, Z74739, AF045555, AP000359, AC005520, AD000092, AC007666, AC006511, AC004612, AC004972, AC005041, AC005696, AI034420, M89651, AC016831, AC002543, AC008040, AI022302, Z93241, AC004033, AF049895, AF015171, AC006480, AC004448, AC008984, AC006600, AI035422, AC007114, Z83840, AP000512, AP000698, AB001523, Z82190, AI139054, U18392, AC005940, AC005736, AI049759, AP001059, AI109984, AI031594, AC002072, AC004019, AB023054, AC005821, Z97630, AC007014, AC007066, AF107885, AP000513, AP001040, AC006512, AF134726, AC006042, AC006132, AC004263, AC004230, AC005154, Z49235, AI021528, AC005618, AC003962, AC005015, AP000555, U78027, AC005544, Z98030, AC005600, AC005500, AC007243, Z98950, AC002470, AC004673, D84394, AC006539, AC007421, AC003110, AC005722, U80017, AF038438, X54181, X54178, AI031577, U18393, AI096701, AC009509, AC006948, AC006252, Y10196, AC005911,

HCWHX09	1370	625596	1 - 339	15 - 353	AC005375, AL031720, AC002091, AL035448, AC004638, AC003101, L35668, Z86090, AC016026, AL022323, AP000557, AL031255, AC002073, AC004890, AC005612, AC005488, and AC007055.
HCWHX72	1371	849884	1 - 351	15 - 365	T59825.
HCWHX91	1372	723178	1 - 286	15 - 300	
HCWHX95	1373	736004	1 - 260	15 - 274	
HCWHZ18	1374	666452	1 - 329	15 - 343	AI268099, and AI702282.
HCWHZ51	1375	725682	1 - 317	15 - 331	
HCWHZ59	1376	739294	1 - 321	15 - 335	AI525565, AL039783, and AA758552.
HCWHZ83	1377	781186	1 - 128	15 - 142	
HCWHZ89	1378	668670	1 - 144	15 - 158	
HCWKA13	1379	494088	1 - 569	15 - 583	
HCWKA21	1380	670897	1 - 254	15 - 268	AI526203, AI541570, V00116, AF162506, AF162502, AF162504, AF162499, AF162503, AF162505, AF162501, and AF162500.
HCWKA28	1381	466763	1 - 407	15 - 421	AA484648, AA503002, T61555, AP000256, AP000098, U36478, AP000155, AP000014, U91336, AL031659, AC002544, and AC007546.
HCWKA79	1382	574911	1 - 505	15 - 519	AC002040.
HCWKA96	1383	963621	1 - 342	15 - 356	AW181906, AI457975, and AA782016.
HCWKB04	1384	676904	1 - 428	15 - 442	AI299828, N51706, AA936483, R36572, R24933, AI299043, P05240, AI567908, H92474, N51794, AA806500, AA878245, AA482890, AA845639, and AF131763.
HCWKB10	1385	964570	1 - 396	15 - 410	AC004139.
HCWKB33	1386	496385	1 - 138	15 - 152	
HCWKD34	1387	706520	1 - 362	15 - 376	
HCWKF08	1388	959388	1 - 290	15 - 304	
HCWKF28	1389	686655	1 - 327	15 - 341	AI732327, AW327673, AI872229, AA493464, AI754257, AI521019, AI002950, AA132929, AW419201, AI890297, AW338376, AA171400, AW157128, AA218684, AA557945, AI828721, AI572680, AA493546, AI826857, AW243817, AA661583, AI434103, AA384360, AA425283, AI571094, AL039117, AA084320, N26159, AI270280, AA600127, AA570243, AI574926, T34066, N99245, AW085711, W45215, AA557508, AA629668, AI167656, AA807704, T10218, AA601376, AA489390, AI348780, AI520984, AW029626, AI744890, AA430214, AA493245, AA610245, AW020612, AI568262, AI567676, AI732720, AA153398, AA640305, AI889177, AI925588, AI888050, AW129188, AA455202, AI570067, AI275989, AW162762, AA569220, AA535538, R61887, AI734158, AI341986, AI821605, AA287823, R33588, AI609972, AA369465, AA834891, AI620666, AI125143, AI300608, R54095, AW008217, AA340581, AI433952, AW105729, H05066, AA342029, AI086603, AI734193, AA315052, D29474, AA524604.

HCWKFE29	1390	779862	1 - 193	15 - 207
HCWKEG10	1391	964577	1 - 369	15 - 383
HCWKH08	1392	959381	1 - 452	15 - 466

AA687561, R92658, T41164, AA128863, AA830615, AA758275, H52638, AI800345, AI798521, AA653713, AA614139, AI285493, AI921765, AA601390, AI138252, T41132, Z99128, AI031685, AI078639, AC005049, AC006344, AC005921, AC002299, AC005838, AC007129, AC006141, AC002430, AC005823, AL096791, AC005520, AC008040, Z83851, AC006396, AF124523, AI031289, AL022398, Z83844, AC005067, AF017104, AC016831, AC005764, AI135959, AL020993, AP000065, Z82172, AL035658, AC006254, AC007842, AL096699, AL021331, AL049539, AI006997, AC004692, AI034449, AC002352, AC002470, AF112484, AF042834, Z83334, X87333, AF045999, AL035398, U82668, AP000008, AC007880, AP000704, Z82214, AC002402, AI133216, AC000353, AC005274, AC005881, AP000310, Z98272, AC005202, AL031728, AP000116, AC002425, AL031589, AP001068, AC004953, AC005787, AI011930, AF031075, AC003051, AC002511, AP000250, Z99754, AC004652, AC005787, AP000030, AP000211, AC004585, AC004895, AC005822, AI132642, AC004129, AC0060930, AI121603, Z49237, Z97195, AC004050, AL022396, AL031587, AC003666, AC004664, AC003991, Z97196, AI109984, AC004966, AI121653, AC005736, AC009028, AC004887, AC007240, AL049569, AL096768, AP000032, AC004263, AL021707, Z95115, AF001550, AF001549, AF109907, AC008372, AC005332, AP000509, AC003009, AC005971, AI133162, Z84487, AP030876, U62292, AC007766, AC005944, U62293, U63721, AC005057, AI132653, AC004638, L78810, AI117352, AC020663, AI136504, AI133355, AC007130, AC004647, AI031258, AL008726, AL035608, AL031282, AL050307, AC000026, AL035460, AC004967, AC005913, AL009178, AL022721, AC002059, AP000344, and Z99716.					
HCWKH16	1393	661898	1 - 369	15 - 383	AI526025, AI541507, AI557804, AI557719, AI526171, AI557741, AI557764, and V00115.
HCWKH25	1394	678086	1 - 295	15 - 309	
HCWKH36	1395	924191	1 - 287	15 - 301	
HCWKI31	1396	678375	1 - 64	15 - 78	
HCWKI77	1397	920043	1 - 445	15 - 459	
HCWKI92	1398	792689	1 - 466	15 - 480	
HCWKI23	1399	934393	1 - 464	15 - 478	
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HCWK140	1400	861851	1 - 397	15 - 411	
HCWK160	1401	968112	1 - 364	15 - 378	
HCWK196	1402	571302	1 - 291	15 - 305	
HCWK28	1403	849915	1 - 343	15 - 357	
HCWK31	1404	697974	1 - 155	15 - 169	
HCWK58	1405	849934	1 - 393	15 - 407	
HCWK60	1406	740347	1 - 359	15 - 373	
HCWK88	1407	792086	1 - 246	15 - 260	AA535661, F19258, H72666, A1886176, A1923140, AW157326, N99715, AW021917, AA340003, A1721122, AA501872, A167741, A1761471, C18648, A1358229, AA584749, A133986, AW339687, A1088058, A1439360, A1635272, AA366820, AW406447, AA332991, A1281903, AL120483, T12272, N23649, A1305766, AW261871, AW439558, F29989, H00934, T40338, AA652057, AA649642, AA377730, T0617, A1053786, AA581342, A1365988, AL133723, T16592, AA489775, AA365347, AA508080, A1863283, AA125788, A1742771, AW008317, A1567786, AA569284, A1561116, F31204, A1914706, H18175, F18974, A1571512, A10704398, R93061, A1049634, AA515128, AA515435, A1375710, AW193432, A1284640, H60239, F25276, AA558697, AA363260, AW304584, N71724, H92005, F35659, AA483204, A1110822, A146464, AA669251, AW276827, AA558227, AA016286, F28576, A1282907, AA973575, A1569086, AA441788, AW193265, T29180, AW337985, AA682189, A1079910, A1307099, A1445436, AW023270, A1802526, A1064864, A1890052, AA743956, A1093786, A1613280, AA181718, AW780929, AL118911, A1493546, A1079645, A1344844, F36273, F37286, A1521901, AA309485, A1471481, AA919037, A1048925, A1042856, AW193512, AA095511, A1963095, A1879000, AW270284, AW327360, AA745410, T58118, F36306, AA443065, A1688846, AA344959, Z84480, A1246003, A1049836, A121658, AC002429, AC005386, AC009501, AP000292, A1039905, AC004650, A109653, Z93023, AC002981, AP000111, AP000043, AC018633, AC006030, AC004808, A1035411, AC002386, A1022147, A1009051, A1008629, AC005901, AF222686, A1034384, AC009405, A1035090, A1035671, AC004903, A1031116, A132708, AC005158, AC003029, AC005723, A1049647, A1117693, A109759, AF053356, AC007036, AC004485, AC004655, A121603, A1011930, A1049745, AC004453, A1031432, AC004738, AC0006152, AC004069, A1109854, Z94004, AC008012, Z94056, AC002067, A1031602, AC008115, AC006347, AC004901, AC005341, A1006345, AC004070, AC004072, A133321, AC000085, AC007625, AC006071, AC005597, A1022165, AC004382, Z93242, AF111168, AC005280, U91322, A1033375, AC006482, AC007172, A1031542, AC002349, AF123462, A1022318, Z98036, AC011604, AC006046, AC006111, Z93928, A1049834, AC008008, AC007102, AC004458, AC005829, A1118497, A1035427, AC005183, AC007207, AC007743, AC000482.

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HCWKM90	1408	960177	1 - 325	15 - 339	AA053759, AI452726, AA724782, AI275071, T08298, AA582073, AA953238, AI811302, AA584526, AI147425, AI635247, AI310873, AI345366, AA047715, AI147466, AI921328, N71746, AA758366, AA581329, Z22942, AA654318, AI445088, AA702729, H55756, AA679511, AA741028, AL040170, AI268334, AI268336, C18993, W56883, AA126450, AL138128, AA292178, AW118442, W92132, AW271711, T47909, AA236903, AL036037, T11828, AI913370, AI349849, AW168420, AA683238, AA757775, AI732223, AW128884, AI119691, AW128900, AI732154, AA847181, AW021917, AA857428, AL037952, AL044286, AI1590485, AL037383, AA219059, AA487272, AA350349, R02522, AA484373, AI207846, T89952, AA513188, Z22633, AI283456, AA872990, AW021583, AI371429, AA464976, AA454041, T65779, AI094315, AA600869, AI023637, AA136649, AI135377, T61573, AC007036, AC004080, AC004595, AP000301, AP000114, AP0000045, AL035403, AC003024, Z95116, AC006195, Z97987, AC004816, AC004912, AC003687, AC004531, AC006037, Z83301, AC010206, AC002319, AC005670, AF110527, AL022333, AL022314, AC006928, AP000346, AF036405, AC004975, AP000495, AC007226, AC009516, Z82190, AC004811, AL122020, AL049781, AL050402, AR038761, AP000253, AP000252, AP000213, AP000135, AC007030, AP000031, AC002381, AC005495, AL031734, AP000298, AF020662, Z75746, L34079, AF039907, AC004196, AC004156, AC000393, AC005387, AP000390, AP000745, U07562, AC005903, AL121588, Z73001, AL035652, AF190641, AL109827, AP000044, AP000113, AP000162, AP000065, AL050341, AL031776, AF191069, AC004068, AL031447, AI239321, AC005887, AL034417, AL0011523, AL049694, AL034561, AF207550, AL033377, AC004848, AP000697, AL035246, Z82215, AL035423, AL049636, AL024988, AL050403, AC004695, AC007358, AC005088, AC007879, AC002350, AC007065, U91318, AC002449, AL135783, AC012152, AC005871, AC006040, AC007707, AC005971, AC007298, Z69666, AC007162, AC003090, AC006146, AL031116, AC005668, AC005972, AL121823, Z84718, AL117354, AC008064, AC007917, AC005323, AC005919, AL000883, AP000292, AL049795, AC007099,
HCWKN08	1409	959380	1 - 270	15 - 284	
HCWKN57	1410	861537	1 - 398	15 - 412	



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HCWK051	1411	959684	1 - 382	15 - 496
HCWK082	1412	827083	1 - 314	15 - 328
HCWK093	1413	924104	1 - 318	15 - 332
HCWK051	1414	725653	1 - 333	15 - 347
HCWK053	1415	664923	1 - 296	15 - 310
HCWK056	1416	849861	1 - 386	15 - 400
HCWK063	1417	732447	1 - 323	15 - 337
HCWK031	1418	849851	1 - 533	15 - 547
HCWK055	1419	706487	1 - 406	15 - 420
HCWK013	1420	917268	1 - 309	15 - 323
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HCWK080	1421	527074	1 - 384	15 - 398
HCWK013	1422	657194	1 - 299	15 - 313
HCWK011	1423	966989	1 - 355	15 - 369
				AW271211, AL244254, N22058, AA715418, AA955031, AL078472, AP000023, AC004106, AF003626, AF139813, AP000555, AC004858, AC005277, AL139054, AL022163, AC004228, AL031311, AF109907, AC005972, AL031594, AF129756, AC005666, AC004878, AC004491, AL122020, AL049872, AC005971, AC008119, AC004983, AC006064, AC006111, AP000501, AL033392, AC005288, AL049780, AC004622, AC004913, AC002316, AC005844, AC005829, AL009179, AC005778, AC003025, Z84483, AC004408, AC000085, AC004678, AL109758, Z84467.

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AC007463.					
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HCWK743 1424 659539 1 - 230 15 - 244					
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HCWKX77 1433 772163 1 - 405 15 - 419					
HCWKX81 1434 724873 1 - 437 15 - 451					
HCWL68 1435 665744 1 - 291 15 - 305					
HCWLD01 1436 916439 1 - 691 15 - 705					

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HCWLD006	1437	935392	1 - 439	15 - 453
HCWLD30	1438	933118	1 - 419	15 - 433

AA857812, AA568204, A1061313, AW242031, A1679759, AP984168, A1623764, AW103758, AW266686, AP962030, AA847704, A1355246, A1633168, A1040051, A1653776, A1890046, AA489390, A1572680, A1815210, AW103030, A1431513, N23097, AA468576, AA590749, AA463590, AA558366, AW728911, AW082104, AA904211, A1696878, AA664604, A1484404, A1079901, R44593, A1037910, A1362442, A15158023, A1927275, A1445216, AA599080, A16610381, A1733856, AA582554, AW274078, A1859438, A1357976, AA513916, A1120920, N67313, AA424249, AA558488, AA698334, AW167154, N23913, AW023370, AA572983, A1049666, AA584484, T50676, A1245693, AW189068, A176604, A1267356, AW026305, A1282479, A1278972, A1421950, AW408767, A1419337, A1598003, A14466233, H47736, A1285696, A1590593, A1119691, H60912, A1590404, AW068853, A1961983, X322018, AW302709, A1830390, A1053673, AA600202, A1417469, AW049694, U195739, A182214, A1045029, AP000359, A1034417, AC005004, Z98048, AC005231, AC007055, AC003041, AC005043, AF165926, AC007308, AC005089, AC002470, Z99716, A1031283, A1132777, U85195, A1034420, AF196779, Z83847, AC003101, AE000638, AC005726, AP000514, AC000575, AC004526, Z83844, A1049795, AC002316, A1022721, AC006641, AP001114, A1133246, Z93241, A104002314, AF111168, AC004797, AD000671, AC007536, AC006696, A1034379, A1033525, X55448, A1035587, AC005071, U80071, AC003029, AC004757, AC005261, AP000555, AC006530, AC005962, Z97054, AC004760, AB014078, AC005730, A1031255, Z98044, AC002472, AC000025, AC005015, Z93020, AP000046, AP000008, AC004895, U19318, Z93017, AC007160, A1031659, AP000057, AC007193, AC0020663, AC006252, A1049776, AC009516, AC004150, AP000509, AC003080, AC007664, A1031277, AC007376, AF019413, AC005399, AC000041, AC002563, AC006111, A1020995, AC005920, Z93023, U78027, AC003007, AC005844, AC004832, A1031767, A1035417, AF129756, AC006014, A1080243, AC002477, A117694, A121653, A1049760, AC004814, A1035422, A1031681, AC005940, AC005544, A1049829, AC005324, AC005624, AC005907, AC005280, AC004622, A1078593, AF045555, A1021154, A1016025, A1173737, AC006121, AC005921, AC005145, A1022336, AC004878, AC002351, AP000536, AF196969, AC003043, A1031589, AC005971, AF205588, AC004253, A1024507, AC008657, AC004491, A1022165, AC006141, A121655, AC007371, AC006146, A1096701, AC007726, AC005409, AC005332, AC006511, A1020997, AC002996, A1031295, A1022313, AC008071, AC007283, Z95152, Z85986, AC006283, AC003992, U191322, AC005081, AC007436, AF038458, U19126, AC004767, AC005899, AC005775, AC004821, AC004099, AC004796, AF008710, AC006116, AC008018, AC004653, AP000050, A1035460, AC002425, AC002288, AC002480, A1024498, A1023575, Z93930, AC007011, A1034549, AC007199, AC004983, A1133448, A10409181, AP000472, AP000117, AC004765, A1021453, AC016630, A1050321, Z84476, A1173551, AC002250, AC006251, AC005881, AP001053, A1133245, A1008730, AC004659, A10031289, AC004913, A1212595, Y14768, AP000011, AP000159, AC006160, AC004596, AC006449,

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HCWLD83	1439	728219	1 - 304	15 - 318
HCWLE11	1440	880982	1 - 399	15 - 413
HCWLE34	1441	576816	1 - 416	15 - 430
HCWLE37	1442	960093	1 - 400	15 - 414
HCWLE46	1443	719247	1 - 516	15 - 530
HCWLE57	1444	764189	1 - 471	15 - 485
HCWLE64	1445	745863	1 - 300	15 - 314
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HCWLE95	1446	684331	1 - 175	15 - 189
HCWLE102	1447	853014	1 - 688	15 - 702

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HCWLH09	1448	625538	1 - 517	15 - 531	AI791227, AA524604, AI708424, AI141202, AI628922, AL134669, AA663579, AI572680, AA504951, AI791720, AI079408, AI079869, AL119331, AA595370, AA577824, AA434870, AI708663, AW021674, AA723282, AI732327, AI828721, AW238137, AA640305, AI753969, AI745666, AI732720, T59943, AI174827, AW022796, AI889177, AI003086, AI049999, AI890297, AW338376, AA171400, AL042539, AI310464, AI434103, AA601712, AI733523, AW248479, AA218684, AW008217, AI860423, AI734119, AA084320, AI312614, AL044966, AI344906, AI270280, AA569220, AI148840, AI254267, AA643788, AI199578, AI221027, AI884404, AA652675, AW275432, AA330549, AW157128, AL044701, AA629668, F25759, AI722229, H64858, H64884, AW338633, H59797, AI679902, AI925423, AI679394, AI678812, AL036896, AA284638, AI884763, AA618531, AA554289, AI567676, AI678468, AI038029, AA525818, AA470490, AA834891, AI281622, N70293, T03576, AI963816, AA493546, AL133238, U91321, AB001523, AC005288, AC004703, AC004752, Z84474, AC006130, AL021940, AC006581, AL035086, AL021391, Z97054, AC007537, AC005412, AL008582, U80017, AF134726, AC005971, AP000692, AC008372, AC005358, AL132777, AL031587, Z84466, AC005519, Z98051, AL022315, AP000512, AL122020, AC005484, AP000099, AC006162, AF111168, Z82198, AC002310, AF118808, AP000365, AC003982, AL031846, AL031666, AC007220, AC002312, AP000036, AC004125, AC005585, AL121603, AC005180, AC004966, AC008044, AC006197, AC004816, AL049776, AC007878, AP000555, AC006254, AF053356, AC005899, AC004638, AP000503, AC005839, AC005747, AC006121, U63721, AC005829, AC006453, AC009516, AC007376, AC002418, AC004821, AE023051, AL049694, AI246003, AC005326, AL078593, Z82201, AC004913, AC004890, AC005291, AC007227, AL022323, AC005837, AL031283, AL022165, Z97053, AC005527, AC005280, AL080243, U78027, AC005261, AL031670, AC004832, AC005031, AC005015, AL049759, AL121595, U85195, AC004099, AC007688, AC005529, AC004386, AC007421, AC005666, AL031427, U52112, AL022316, AC005911, AC006511, AC004552, AC005409, AL022163, AC006277, AC006026, U62293, AE006658, Z83840, AC005399, AC006538, AC000092, AL031311, AL034549, Z98200, Z93017, AC006241, AF111167, AC005932, AL049869, AL096701, AC003665, AC006530, AC004796,
HCWLH20	1449	520356	1 - 336	15 - 350	
HCWLH42	1450	954875	1 - 677	15 - 691	

HCWLH75	1451	670202	1 - 232	15 - 246	<p>AC002429, AL035422, AC005696, AL035455, AP000359, AL022476, AF088219, AF107885, AC007688, AL044420, AC005037, AC002375, U91325, AC006312, AL035460, AL009181, AC002377, AC005377, AL121655, Z98044, Z98048, AB003151, AC007193, AL008718, AC004659, AL022238, AC004805, AC007934, AC005632, AL049757, AC004673, AC007546, AL121653, AL117258, AL132712, AC016025, U62317, AC005553, AC005531, Z82208, AC006449, AL139054, AC005231, AL022326, AJ003147, AF111169, AC004702, AL109952, AC005755, AL022336, AC004671, AC006057, AC005089, AC007051, AC004228, AL035587, AL035659, AC005920, AC004997, AC002477, Z98742, AC006040, AC006344, L78833, AL133448, Z99716, AC003025, AC005907, AC004929, AL020997, L1251973, AC004883, AC005355, AC006509, AC003379, AL050307, AC005057, AP001065, Z95114, AF109907, AP000279, AC004895, AL021707, AF139813, Z83844, AC005730, AC004812, AL023807, AC004263, AC003041, AP000553, AC006006, AC004662, AL024498, AC004150, AC003966, AL031003, AL050317, AP000556, AL035072, AC006001, U47924, AC006120, AL031286, AR036572, U91328, AC006211, AP000350, AC005722, AC007151, AC003957, AC003043, AC007160, AC004859, AC004967, Z92542, AC004491, AC004019, and AC007690.</p> <p>AI884861, C16780, C16638, AI267356, AA224525, AW270429, T02817, AI267450, AW270351, AI859906, T07225, AI084157, AW062363, AA706160, T08386, AA121784, H47368, AI002389, AI690474, AA730336, H38228, AL044177, N38991, AA526401, AI469392, AI889426, AI791227, AI732911, AA995373, F35684, AI984118, F30497, AA078509, AA652763, Z99930, AI143653, AW019964, AW342143, N64577, AI859605, AI860535, AA857812, AA186905, H425626, AI537800, H83126, AW104831, AI888298, AI279477, AL021154, U02052, AP000432, AC005940, AL096701, AC005288, AC006130, AC006019, AF124730, AL117354, AC000026, AC004234, AL035695, AC009247, Z93930, AC005740, AL031670, AL031846, AL022165, AC007386, AC006965, AF196972, Z84480, AL022320, AC006255, AC004531, AC0060930, AF020503, AP000501, AC004941, AC007283, AL078638, AF001549, U93742, AC005822, Z93016, AC006146, AL022316, AL033527, AL031277, AC007216, AL132712, Z97184, AL031664, AC007388, AC000092, AC006285, AP000466, AC005746, AC002316, AP000555, AC006539, AL034420, AC002059, L47334, AC000052, AC016025, AC005618, AC007376, L48038, AL035072, AF172277, AC002368, AP000550, AC006251, AL023281, AC004973, AL034553, Z83826, AC009697, AL022313, AF047825, AC004019, AC005488, AC004956, AC006538, AC005251, AF196779, AC005154, AC005004, AC006241, AL050348, AC005696, AL035455, AL022323, AL008583, AC004879, AC005911, AF111167, AP000557, AL008582, AC006236, AB023048, L78833, AL10279, AL049830, AC006529, AC0060353, AC004020, Z97635, AL034451, AL031311, AL049758, AC003965, AC002425, AC003689, AC004799, AL121603, AC005519, AC007358, AC004491, AC007193, AL034369, AC006946, AC008018, U95740, M17262, AP000349, AC007066, AF064863, AL022326, AC006441, AP000553, AC007690, AC002326, AC005913, AC004448, AC005399, AL109657, U91321.</p>
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HCWLH78	1452	935908	1 - 354	15 - 368	
HCWLH79	1453	959458	1 - 433	15 - 447	
HCWLH80	1454	577886	1 - 387	15 - 401	
HCWSB09	1455	923573	1 - 235	15 - 249	
HCWSB30	1456	771897	1 - 496	15 - 510	
HCWSB65	1457	728360	1 - 326	15 - 340	
HCWTA02	1458	919258	1 - 341	15 - 355	
HCWTA59	1459	531422	1 - 221	15 - 235	
HCWTB01	1460	861850	1 - 358	15 - 372	



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HCWTB08	1461	920509	1 - 317	15 - 331	AL057485, N83963, N87188, N83707, AC006993, AF045432, U48697, AL243486, U48699, U39066, AR018815, AF102850, AF001863, AF061744, AF011573, X99052, Y16299, X99058, X99051, X99055, X99060, and X99057.
HCWTB11	1462	965024	1 - 328	15 - 342	
HCWTB13	1463	861029	1 - 347	15 - 361	
HCWTB14	1464	657621	1 - 315	15 - 329	
HCWTB25	1465	677748	1 - 429	15 - 443	AL045970, AF034803, and AL049694.
HCWTB31	1466	697615	1 - 465	15 - 479	
HCWTB33	1467	702129	1 - 543	15 - 557	AL341548, AA167659, AA716348, AL798489, AA490183, AW274346, AL345654, AW419262, AL613280, AW193265, AA438643, W47183, AL350211, AL341664, AA446657, AA577906, AA551503, AL375710, AA719805, AL688846, AA973803, AA350859, AA599920, AW193432, AA049642, AA483223, AL211385, AL754638, AA486414, AL792518, AW408707, AA601222, AL962050, AA586458, AL061334, AA970213, AL619997, AW118338, AL002834, AL814735, AW080134, AA828712, Z97196, AC002470, AP000045, AC003957, AC006946, AP000501, Z94277, AC007685, AL049569, AC002531, AC004996, AC007274, AC002347, AC005295, AC005291, AL002315, AC005632, AL002375, AL049795, AL049712, AC003569, AC007191, AC007919, AC002430, AL031666, AL008718, AC005696, AL121748, AC007014, AC000351, AC006241, AC004019, AL133371, AC007384, AL008627, AC018769, AC009247, AC005231, AL080243, AC005900, AC005746, AC004987, AC004884, AL096701, AC005393, AC004584, AC007151, AC007128, AL050342, AP000113, AC005778, AC008372, AC003007, AR036572.

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HCWTFB36	1468	529499	1 - 405	15 - 419	
HCWTFB38	1469	732440	1 - 340	15 - 354	
HCWTFB56	1470	853009	1 - 474	15 - 488	
HCWTFB65	1471	861848	1 - 401	15 - 415	
HCWTFB77	1472	771887	1 - 434	15 - 448	AC005045.
HCWTFB83	1473	730832	1 - 365	15 - 379	AC004963.
HCWTF05	1474	840954	1 - 304	15 - 318	
HCWTF11	1475	966513	1 - 734	15 - 748	
HCWTF19	1476	668358	1 - 353	15 - 367	
HCWTF72	1477	760898	1 - 349	15 - 363	AL679759, AA313133, AA548692, AL065043, AA968509, AL362442, AA092862, AA128969, T60940, T39390, AL624990, AL620548, F00211, W44359, AW029574, AA904211, AL143653, AL289050, AL284092, H25626, AL254508, AL251696, AA302812, AA564256, AA598608, AW054936, F25640, AA814719, AA515929, AL042869, AA021139, AA557984, AA728911, AA857812, AA779018, AL132929, AA633565, AA457482, N57709, AA437402, N73060, AL917053, AL341664, AA700481, AW029269, AL560054, AW080772, AC006241, AC005755, AC004626, AC007066, AD000092, AC007055, AC009399, AL049636, AL031056, AL049643, Z92540, AC007376, U62317, AC005081, AL049779, AC002350, AC010170, AC005180, AC004832, Z98949, AC004686, Z92541, AB009666, AC004938, AC009181, AC005015, AL021393, AL049540, AC004623, AL117355, AC005920, AL035683, AC005071, AC007151, AC016026, AC004983, AL117330, AP000553, AC006285, AC002088, AC005093, AC008064, AC005826, AC005751, AC009721, AC005065, AL049871, Z98304, AC007421, AC010582, AL034549, AC004383, AC008000, AC005829, AC022517, AL049780, AL022329, AL008582, AP000692, AC006236, AC005690, AL022165, AC005599, AB015355, AL021407, AL022316, AC002073, AC005291, AC007541, AC006127, AC002563, AL035659, AC006388, AC008124, AC006121, Z98052, AC006539, AC006277, AC006966, AC005231, AC005736, X51956, AL022396, AC000003, AC007938, AL031315, AC002538, AC006323, AC005666,

HCWTG01	1478	915863	1 - 451	15 - 465	AC007766, AC005874, AF134471, AC002476, AP000495, AC005102, AC006077, AC005519, and Z82215.
HCWTG15	1479	659860	1 - 539	15 - 553	T09124, H29110, AC007239, and AL117258
HCWTG26	1480	681271	1 - 542	15 - 556	
HCWTG30	1481	954579	1 - 184	15 - 198	N83963, A1657485, N87188, N83707, U19066, U48696, AF045432, A1243486, U48697, AR018815, X99036, X99052, Y16299, X99058, X99051, AF102850, AF001863, AF061744, X99055, AF011573, X99060, and X99057.
HCWTG44	1482	657911	1 - 559	15 - 573	
HCWTG45	1483	662482	1 - 372	15 - 386	
HCWTG60	1484	740078	1 - 372	15 - 386	
HCWTG66	1485	754823	1 - 426	15 - 440	
HCWTG77	1486	924107	1 - 292	15 - 306	H54210, AA594169, T94094, T94176, A1445316, A1762836, AA601422, A1821390, AA054639, AC004263, Z99943, U95740, AL021546, AC004596, AC005412, AL132777, AC005372, AC018769, AC002091, AC006441, AL021394, AC005696, AC008372, Z85987, AL022476, AL008726, Z97200, and AP000556.
HCWTG81	1487	773341	1 - 339	15 - 353	
HCWT125	1488	669935	1 - 421	15 - 435	
HCWT133	1489	701757	1 - 321	15 - 335	
HCWT138	1490	576883	1 - 355	15 - 369	
HCWT144	1491	689971	1 - 384	15 - 398	
HCWT147	1492	720023	1 - 341	15 - 355	
HCWT154	1493	723080	1 - 263	15 - 277	
HCWTJ01	1494	915878	1 - 322	15 - 336	
HCWTJ50	1495	724072	1 - 297	15 - 311	
HCWTL24	1496	676906	1 - 311	15 - 325	
HCWTL25	1497	598511	1 - 428	15 - 442	
HCWTL51	1498	725482	1 - 425	15 - 439	AA493760, AA494202, AA362037, R10297, AC003003, AC004084, AC003669, AP000344, AC004967, and AC003010.
HCWTL52	1499	573539	1 - 321	15 - 335	
HCWTL58	1500	697623	1 - 380	15 - 394	
HCWTL69	1501	960597	1 - 440	15 - 454	AW393605, A1526146, A1541503, A1526179, A1557778, A1541501, A1526154, A1541531, A1541493, A1526185, A1557718, A1557740, A1557747, A1541516, A1557797, A1541487, A1557735, A1557779, A1541515, A1526178, A1541489, AB010555, V00124, V00125, J00036, J00037, J00034, J00030, J00038, J00032, and K00133.
HCWTL78	1502	760707	1 - 217	15 - 231	AC004539.

HCWTL85	1503	836155	1 - 426	15 - 440	AA635433, AA302982, T1936, AL249688, AL635325, AA515742, AA603264, AL049643, AA015948, AI587479, R70883, AL245679, AA368659, F31867, AA568204, AA570740, AA436066, T07878, AA229988, T49933, AI198718, AW051819, AA550959, AI289055, AA229159, AW304699, AI038304, AA609153, AA661948, AA516206, AI754567, AI509100, AW192599, N28624, AI754105, AI755214, AI821805, AW028950, AW188742, AW243945, AI791659, AI821056, AI808307, AA666295, AA167293, AA936718, AI792092, AC004216, U91321, AI124731, AC005358, AC002395, AC003070, Z98941, AI111168, AP000513, Z84469, Y10196, AL049776, AC007637, AC004859, AL021394, AC003037, AC005972, AC004913, AL022721, AC004686, AC006479, AF030453, AL049569, AC004765, AC005962, AL022238, AC005510, AC004382, AF001552, AF067844, AC005031, AL035090, AC005212, AC005049, AP000521, AC003954, AC005921, AL021918, AC005231, AC005632, AC007308, AC004832, AC003007, AL049760, Z92244, AF029308, AL109758, Z85986, AF109907, AC004139, AP000501, AC004694, AC005899, AL031431, AC005815, AL080243, AC006455, AC003665, AF196969, AC009509, AC006077, U80017, AL133243, AC006430, AC006050, AC006487, AC006449, AL023575, AC006026, AL121658, AL049709, AC005192, AC005015, AC005081, AL031255, AC004491, AL133245, Z98950, AL121653, AC004020, AL035455, AC007934, AC005325, AC004620, AC004383, AC002312, AL034429, AL109798, AC004816, AC006581, AL031848, AL049694, AC005562, Z82198, AC004890, AL034423, AC004797, AC007437, AC004526, AC003990, Z98743, AC005913, AF130343, Z99716, AC005274, Z98036, AC003009, AL031733, AL109827, AL049795, AL031575, AL033530, AC006211, AC007731, Z82181, AC005070, AC007687, Z85996, AP000116, Z98946, AC007899, AC004865, AL109627, Z93020, AC004583, AC005696, AC009721, Z97053, AL031311, AL031681, AC002429, AC004783, AC007388, AF049895, AC005754, AC005160, AC005288, AL035400, AC004477, AL050318, AC007690, AC000379, AC002558, Z97195, AC005412, AC004584, AC004662, AC005901, AL132777, AC005088, Z97054, Z95152, AC002565, AC007617, AC004998, AC005089, AL023553, AP000694, AL049712, AC005829, AL133353, Z99496, AL031121, AC005189, AP000665, AC006007, AC004019, X87344, U80460, AL0222336, AL139054, AC002350, AC002044, AL035684, AC006965, AL049872, AC006571, AC009294, AC002347, AC006006, AL139165, Z82188, AC009247, Z84466, Z98200, AC005900, AC003992, AC008134, AB003151, AC003101, AC002059, AC004990, AC007052, AC006120, AC005500, AC005881, AC006600, AC005920, AL034549, AC005225, AC009946, AC007065, AB026898, AL121754, AC005695, AC007533, AC005291, AC020663, AL135783, AL022163, AC005736, AJ010770, and AL031286. AA852413.
HCWTL16	1504	661509	1 - 378	15 - 392	AA666332, AL287475, H77530, AA640410, AA640430, H93453, AI049508, AI366993,
HCWTO06	1505	934912	1 - 347	15 - 361	AA536016, AW020893, AA478355, R99851, AW360845, AW376931, AI873852, H70076, AI110595, AA704393, W52505, AW168420, AI783581, AI732120, AA680243, R98221, H70076, AI110595,

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			15 - 412	
			15 - 398	
			15 - 393	
			15 - 425	AA843187
			15 - 207	
			15 - 375	
			15 - 420	
HCWTO29	1506	660457		
HCWTO35	1507	706525		
HCWTO52	1508	726444		
HCWTO60	1509	681257		
HCWTP13	1510	656678		
HCWTP22	1511	674158		

HCWTP76	1512	731438	1 - 515	15 - 529	Z52525, and Z25531.
HCWTP77	1513	529346	1 - 399	15 - 413	AL035403.
HCWTP90	1514	788663	1 - 380	15 - 394	AA410788, AW130427, AW140111, AA583394, AA644090, AI923052, N23504, AA610509, AA574442, AW148507, AT753113, AW023111, AA191418, AI085867, AL040054, AI123396, AC003530, AA440997, AI962030, AI066646, AW238253, AL037910, AI1370475, AS533408, AA659232, AI056177, AA659535, AA601327, AI251576, AA578621, AI278972, AI587583, AI587565, AI908093, AA630672, AL037632, AA833896, AI821987, AA714110, AI732869, AI086603, AW402711, AA579427, AI583466, AA833875, AA526683, AA557982, AA847508, AA702729, AA715814, AA570588, AW188427, AA526326, AW190302, AI279417, AA613624, AI016704, AI755202, AA629540, U48696, J00083, M37468, AF031078, AF030876, U67822, AI109798, U67820, AC004216, AC004408, AC002288, AI109627, AC005104, AF134726, AL020993, AB003151, AC000070, AL023575, AC007376, AC002364, AC005102, AC000353, AC005089, AP000502, AC005520, L78833, AC005305, AL020995, AP000691, AC005529, AC005005, AP000076, AC006023, AC005015, AL040757, Z85986, AC004962, AL040872, AF001550, Z95116, Z97183, L11910, AL031680, AP000689, AL035684, AC004050, AC0006511, AC009247, AL133448, AL049766, AC004938, AC007690, AC004834, AC005952, AC005180, AC002546, U91323, U07563, Y18000, AF045555, AC002316, AC005988, AC000039, AL022320, AC003043, AL031056, AP000688, AL022311, AL035659, X76498, Z84469, AC004817, AL022327, AC005291, Z49235, AC005057, AC004967, AP000031, AC002395, AC007298, AC005081, AL136295, AI109801, AL121603, AL139054, AC002306, AL031276, U48697, AC006344, AC004859, AL049569, Z82178, AC003098, AC004813, AC007057, Z85987, AC007510, AP000049, AC005581, AC004883, U85195, AL020997, AC005933, AC002072, U47924, AL121769, AC006132, AL034429, AC004644, AC007450, AF053356, AL035587, AC005227, AC006509, AL078638, AC002219, AC003101, AC004525, Z98048, Z98200, AC004821, AC002369, AP000065, AL133163, AL133246, AL078581, AC008040, AP000311, AC005694, AC002472, AC005261, AC007052, AE000658, AL031295, AC007686, AC005722, Z99755, AC005064, AC005884, AC006538, AC006530, AC005667, AL021328, AP000306, AL035420, AC005037, Z82206, AC006239, AC007435, AL008719, AF093117, AC006953, AP000167, AP000120, AP000052, AC002492, AC005014, AF019413, Z98946, AC000240, AL080243, AC006077, AB023048, Z95152, AP000117, AC005071, AL109758, AC007999, AC002563, AC005736, AC004596, AC006211, AC004253, AC005500, AL049692, AC000118, AC007899, J03071, AC004804, AL049776, AC007731, AL022323, AC000004, U07562, Y10196, AC004815, AP000338, AC004797, AC006111, AC003982, AC005940, AL121653, AC0012085, AC006121, AC005841, AC006275, Z93244, and AL031662.
HCWTP91	1515	661551	1 - 521	15 - 535	F05533, F05160, AF095687, and AC008039.
HCWTR08	1516	958791	1 - 334	15 - 348	
HCWTR34	1517	729290	1 - 333	15 - 347	AA904275, AA593471, AW020198, AW167154, AA112924, AA381762, H65464, AI285521.

HCWTR77	1518	659506	1 - 380	15 - 394	<p> AL186365, AA808998, AL598003, AW268277, H48546, AW117860, AA365586, AA610255, F12893, AL287964, AA745302, AA664604, A952786, AA372106, AA310557, AL287921, AL754037, AL859280, AL799421, AL039187, M86588, AW166611, AA779783, F15524, AL014378, F26152, AA381747, AA809425, AL762575, AA574442, T80500, AA342188, AL728937, AA653139, AL452836, AW069450, AA528441, AA076427, AL832865, AL244356, AW383952, AL754689, AL291961, AA569202, AA740403, AL342622, AA579278, AL863399, AA987962, AA837715, AL581486, AL598060, AL071418, AA457754, AW103415, AL016704, H79156, AW189367, AA043218, AC005940, M87914, AC005874, AF134471, AC002565, AC005082, AC007055, AL121657, AC006539, AL006995, AL132987, Z84480, AF053356, AC007226, AC004522, AL136504, AC007151, AF045555, AL035448, AL035405, AL021918, AC005033, AC005954, AP000031, AL031677, AL049780, AL109799, AC005378, AC006137, AC005625, AL031983, AC007263, AL121655, AC002073, AC006544, AC005740, AC006480, AL080242, AL109627, AP000248, AL022332, AC005914, AC002350, AC005081, AL031846, AP000359, AC005924, AC005913, AC008040, AP000354, AL034421, U02068, AC009498, AL031133, AC003083, AC005520, AP000507, AC004921, AL022237, U85195, AC007041, AE000658, AL080239, AB000882, AC020663, AC004841, AC004660, AC004837, AC006468, AC007285, AC007308, AC008033, AL021808, AL121934, AF111168, AC002470, AL031985, AC005358, AC005412, AC002996, Z94056, AL003147, AC006023, D00591, AC004527, AL035542, AC004049, AC005288, AP000210, AP000132, AF091512, A51133, A76958, AF037222, AL049589, AC005409, Z97053, AL008635, AC004400, M87918, AC005796, AL031428, AC007225, AC004859, AP000694, AC007848, AF002993, AC006538, AC007536, AC006080, Z83826, AC002492, AL031053, AL031733, AC002558, AL049557, AC005803, AL135744, AP000255, AC003101, AL049697, AL121658, AL022320, AL021978, AC007011, AC004741, AP000152, AC006501, AC005880, AC004051, AL034555, AF205588, U73023, AL133448, AL020993, AL133246, AP000213, AP000135, AC005907, Z69917, AC007057, AL035089, AL133882, AC016025, AL049776, AC004685, AC004882, AC005821, AC007687, AC007388, D86566, AC004686, AP000208, AP000130, AL109984, AL031255, AC007270, AL022578, AC005291, AP000247, AL049636, AC005993, AC003688, AC005971, AC002394, AC006449, AC005755, AP000498, AC005180, AC004019, AC000381, AL049759, AC006055, AL031681, Z82206, AC005764, AC0004150, AL034420, AF222685, AC007537, AB020858, AL049694, AC006455, AC005274, AF190465, AL035450, AC004996, AC004672, AC007899, AC0033663, AC007686, AC004812, AC000015, AL008726, AC007735, Z49237, AL035413, D87675, Z49236, AC000353, AC004771, AC005215, AF038458, AL035587, Z73496, AL008575, AL031666, Z99570, AC006126, AC002319, AP000513, AC006285, AC007707, AC002316, U75931, AC005858, AC004821, AP000512, AC007371, AC004072, AC007993, AC005696, AC006977, AC005513, Z82182, AC007021, and AL022326. </p>
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HCWTS15	1519	654317	1 - 350	15 - 364	
HCWTS84	1520	669926	1 - 348	15 - 362	AB017567, AC005231, AC005911, AL121603, and AC005736.
HCWTT20	1521	669430	1 - 422	15 - 436	AW148697, and N75845.
HCWTT45	1522	576720	1 - 429	15 - 443	
HCWTT47	1523	706577	1 - 342	15 - 356	
HCWTT63	1524	542409	1 - 421	15 - 435	
HCWTT81	1525	712302	1 - 410	15 - 424	
HCWTT89	1526	786693	1 - 393	15 - 407	
HCWTT12	1527	934902	1 - 537	15 - 551	
HCWTTU83	1528	780917	1 - 437	15 - 451	AA468131, AL820920, AW303196, AL696962, AL042853, AA493695, AL128460, AA468022, AA507824, AA478048, AW301350, AA478355, AL821670, AW270382, AA478209, AW149313, AL687343, AL873990, AA618452, AW020340, AA857486, AW274349, AL524360, AW302903, AW275510, AL963720, AA568869, AA515334, AL110844, AL1369580, AA515549, F12561, AA847952, AL270117, AL409588, F00107, AL111927, F18164, AL457197, AA541423, AA4019312, AA683258, AA468244, AL305766, AA523838, AA720702, AW021735, AL1216990, AA661921, AW275971, AW301995, AA618349, AL247199, AL042753, AA640410, AA640430, AL046725, AA483771, AA515909, AL037040, AL567076, AP925579, AL038606, AA490183, AL345157, AW023149, AA834707, AW075948, AA580808, AA192740, AW303002, AA178953, H70994, AW245747, AW028429, AA584581, AA908687, AW193265, AL801482, AA491650, AW088846, AA719292, AW053911, AA188604, D44638, AL038072, AA388001, AA551552, AL567842, AL821499, AW163293, AL732865, AA724333, AL281881, AA548058, AL064952, AA521323, AA521399, AW440545, H18354, C04454, AA167055, AL133164, AL138455, AA493894, AA631507, AL039145, AA351056, AW340844, AL744826, AL254913, AL056177, AL865905, AW702729, AA780944, AL135357, AA523242, AW264934, AW103758, AW069510, AA491862, AA428792, AA410788, AA747070, AL580250, H23653, AL134957, AC007744, AL121603, AC006511, AC006371, AC005701, AC004987, AC008372, U95742, AC006965, AC006323, AC005242, AL009029, AP000459, AC007216, AC005194, AL049874, AL035405, AC0007274, AC000153, AC006999, AC003003, AL031003, AB020862, AC007376, AF038667, AC009044, AL009179, AC005004, AC006211, AC005772, AC005884, AC007382, AL031666, AC004903, AL132826, Z98941, AC006336, D83989, AC004686, AC005230, AC004861, AL239322, AC006998, AC004531, AF001549, AC005146, AC010202, AC004966, AC007666, AC0004650, Z98744, AL035448, AC001231, AC007684, AL050318, AC005209, AC006479, AC005026, AL109985, AC006044, AC004858, Z93023, AL050308, AC005330, AP000055, AP000170, AC007270, Z99716, AC005291, AC003692, AC006058, AC004865, AC005768, AC007298, AC004519, U57008, AC005815, AC002299, AC002984, AC004960, AP000962, AL133445, AC005011, AC006004, AL034420, Z82198, AC005358, AC004611, AC007226, AL031668, AC004010, AC000052, AL118510, AC005180, AL031429, AC008079, X54179.



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				N83991, N84712, N88601, N88782, N89520, AA093224, N84830, AA247964, N84855, N83992, N86694, AA095559, AA247827, N84048, H58760, N84718, N55698, AA096066, N81993, N83168, AA096046, AA471338, AA095641, N88518, N84829, AA093861, AP005528, AP000529, S78798, AF103726, U48696, AF045432, AF032922, AF102850, AR066487, AF039698, U39066, AJ243486, and AR066480.
				AC006013.
				AL044458, AA610644, H57752, H57751, W27084, AL114772, AL890971, Z99716, AC005180, AL031311, AC006271, AC004883, AC000353, AC007226, Z84469, AC009399, AC005763, AC005015, AD000092, AL031427, AC007993, AC005520, AF111168, AF165926, AC005703, AC006057, AC002461, AC004019, AC004881, AC007666, AL023803, AL050334, AC005011, AC004477, AC007193, AL035420, AC000052, AL031286, AL021707, AC007240, AL109984, AC004859, AC005829, AC005244, AC005940, AC005081, AL049538, AC006449, AC002299, AC004228, U73479, AC006139, AP001068, AC001584, AC008125, AL049872, AL023113, AC007057, AC005231, AC009542, AF053356, AL031678, AC002544, AP000558, AL035423, AJ011930, AC002312, AL008723, AP001053, AC002425, AL023284, AC007421, AC002350,
HCWTU84	1529	666642	1 - 153	15 - 167
HCWTU17	1530	725862	1 - 416	15 - 430
HCWTU62	1531	742696	1 - 564	15 - 578
HCWTU73	1532	574912	1 - 535	15 - 549
HCWTU88	1533	861846	1 - 543	15 - 557
HCWTU19	1534	668355	1 - 399	15 - 413

HCWUA23 HCWUA43	1535 1536	57964 715000	1 - 407 1 - 369	15 - 421 15 - 383	AC005243, Z95116, U47924, and AL117352. AC005837. T07420, D51809, AA760656, AA808064, AA715709, R82432, T03401, AA715507, AA6609616, AA632836, AA411741, W39287, W60522, AA445951, AA427808, F10773, AA812542, AA320941, AA745373, AA461274, AA397415, AA513484, N30876, AA577706, NA4146, AA181931, AP903464, AA244267, A1249365, A1174489, A1884922, R51995, AA741403, W06522, AA325787, AA601390, AA343014, T41164, AA610381, N27615, AA470567, AA6044926, AA907222, AA594179, AA708096, AA078428, AA487720, AA668166, AA774119, F15362, T41132, AA730359, A1252010, A1252880, A1583448, A1903448, AA351128, H29960, A1799421, AA058499, H94979, A740571, AA648560, AA130855, AA216375, AA508026, R94909, A1671077, A1929298, A1929825, AA206594, AA376358, AW157180, AA663437, N40760, AL135018, AA635413, AA716440, AA594746, AA598740, AA600127, A1866377, N78065, A1038577, AP33478, AA508444, AA010973, R83878, H53109, H52053, N72439, AA532732, AA084439, AA827383, AA351808, AA653503, N73724, A1872073, AW342143, AA745302, AW272389, AA649488, AC006388, AC003081, Z99127, AB003151, X69951, AB020865, AP003300, AP000045, AP000113, AC006509, L13711, AC002401, L44140, AF111163, Z74739, AC004408, AC004616, AL050321, AF069074, AF125348, AC002425, AC005017, Z94056, AC005338, AP000565, AL008707, AP000557, Z98885, AF181897, AL096843, AL031431, AC002544, MB4472, AC004755, U34879, U63721, AL021707, AC000024, D87011, AL078596, U91326, AL031664, D88270, AL050404, AP000563, AP000133, AP0000211, AC004687, AF012339, AC005514, AL031602, AC002375, AL034350, AL079303, AC005015, AL096766, AL049761, AC005837, L35532, Z68162, AL031657, Z82203, AC008115, AC006004, AC005280, M22469, M18000, AB022537, AP000353, AP000354, U91323, AC005740, AC009802, AP000556, AF112441, AL031186, AC004583, AC007666, AP000497, AC007510, AL133249, U52112, AC000052, AC005722, AC004019, AR062818, AC005355, AL050332, U89337, AL031672, AL050341, AC002565, AC006146, AC005316, AC005026, AC005011, AC005317, AC007486, AC021092, AC000086, AC006273, AP000228, AP000140, AC006966, AL031005, AC005996, AC004000, L78810, AC005486, AP000088, AF129756, AP000270, AC000032, AP000555, AP000291, AP000256, AC005372, AC005868, AP000098, AP000111, AL034451, AC005208, AC006571, AC007226, AC005846, U17576, AB001907, AF195658, AL023694, AC005543, AL096794, U82668, AL049538, AL035659, Z82195, AC006014, AC004817, Z98044, AL033504, AL121612, AC007993, AC002063, AC005488, AL049780, AC006530, U68061, U950909, AL049856, AC005775, AC004825, AL021154, AC004253, AL009031, AL021578, AC002336, AL135744, AL050140, AP000699, AH029020, AP000348, U07563, AL049734, AC004659, AL035603, L132800, Z99716, AC005602, AL035551, AC004070, AC002412, AL035455, U52111, AL021808, AC005747, AL035089, AC007637, AL135960, AL131016, AL110505, AC004750, AC005568, AC005744, M26434, AL033398, AF045555, AP000502, AP000161,
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HCWUA90	1537	706532	1 - 360		AC003042, AC002115, AL033538, AC008730, AL031781, AF001054, AC004835, AL035696, AC005244, AC005005, AC002352, AC005828, AC007014, AC012384, AC016027, AF013476, AC016830, AC003101, AC007450, Z83844, AC007917, AC004185, AC006047, AF001643, Z82248, AC004156, AC004560, AC006561, U62293, AC003026, AL030502, AC005031, AL031284, AL033530, AC005480, AC005250, AL021328, AC005057, AF000509, AF030453, AC004706, AC006344, AF207550, and U91327.
HCWUB03	1538	923556	1 - 446	15 - 374	
HCWUB08	1539	958770	1 - 392	15 - 406	AL633478, AA652675, AA839390, AL044438, AA693433, AF114095, AL080086, AA630476, AL567976, AL623505, AA369494, T41235, AW162604, AW439455, N24046, AL812187, AA502660, AA502509, AA167178, N70293, AL860094, AW085751, AL014872, AA341391, AA659303, AL621605, AA650288, AL640905, AL625042, AA599712, AA622637, N62478, AL042731, AA507499, AW328185, AL121474, R43468, AA829795, AL690379, AA595661, T62614, AA854460, AA648942, AL500151, AL192771, N92752, AL935827, AL540319, W04238, AA228268, H65404, AL753131, AC005048, AC007904, AL050307, AC004966, Z69650, AC004802, AL078581, AL049843, AC005839, AL050318, AP000497, AL132987, AC005516, AF031076, AL035684, AC004967, Z93931, L47224, L47225, L47226, AC002401, AL031295, AC005288, AC004213, AL022723, AL096716, X59875, AF060911, AC010349, AC004856, L09706, AP000250, Z98272, AC005257, AC005202, Z84721, AP000251, U62293, U63721, AC007536, Z81364, AC003109, Z98051, Z93244, AC005994, AC004874, Z99291, U78027, AC005057, AP000211, AP000133, AP000030, AP000502, AP000065, AL049757, AL035420, AL021393, AL034423, AL008721, AL035458, AL034420, Z98742, Z93017, Z93928, AC002039, AC007845, AL050343, AL035422, AC005343, AC003665, AP000248, U07000, AL024507, AL132716, AL049646, AP001046, AC005137, AL117337, Z98884, AL031584, AP000501, AC016025, AC007686, AL13163, AC005726, AL049779, AC005291, U91322, AC004019, AF205588, AL050323, AC006274, AL133404, Z97183, Z97184, AC004125, AC002504, AC004668, AC002433, AC004962, AL033527, AC004073, AC007879, Y14692, AP000269, AP000103, AP000033, Z97876, AC006162, AL109798, AL010598, AC005361, AF200465, Z85986, AC004805, X87344, AC004526, AC005681, Z48051, AC002049, AC006125, AC002054, AL049540, AL035588, AL049690, AC002472, AC007664, AC006115, AC008018, AL121652, AL135744, AL049872, AC004000, AC000465, AC005158, AC005180, AL023178, AC003030, AP000152, AP000010, AC005231, AC004852, AL049569, AL049776, AF031078, AF209704, AC005484, AL043233, U21936, AR022305, M14949, AF030876, AL007874, M31061, M33764, AC002551, X16277, M81740, X69907, AR007118, AF106656, AL023577, AL031845, U73640, AC005779, AC002103, AC004754, AC007201, AC005175, AC005944, Z81367, AC006167, AC005372, AC004041, AC005937, Z82901, AL049576, AL031321, U71148, AL021453, AC005755, AL133382, AC004776, AC006468, AC004771, Z97352, AL031597, and

HCWUB74	1540	765274	1 - 346	15 - 360	AP000503.
HCWUB83	1541	853008	1 - 434	15 - 448	AA804937, A1554512, AW084364, F03946, AL049761, Z93241, AL049631, AC018633, AC006443, AC004966, AC002045, AC005280, AC005484, AL035450, AC005940, AC005086, AC005562, AL132642, U91318, AL031670, AC006946, AC004217, AC005670, AL050307, AL031577, AL008628, AF047825, AJ251973, AC005305, AC006581, AC006516, AC004967, and Z81365.
HCWUC39	1542	572977	1 - 419	15 - 433	
HCWUC64	1543	588122	1 - 300	15 - 314	
HCWUC94	1544	721663	1 - 487	15 - 501	
HCWUD64	1545	746332	1 - 348	15 - 362	AI902698, AL121235, R76463, A163479, A1828710, AA679936, A1732120, AA680243, AA478355, AA493894, A654781, A1873852, AA366312, AL119649, AA018823, F00231, H84435, F00984, A1088768, F05324, A1049508, AL121207, AA618596, AW003867, AA012964, R86218, AA219150, A1576932, C14877, C14616, T84449, AA728990, AC002395, AC005071, AC004656, AC004159, AF038458, AL035405, AC004760, AC010205, AC005409, AC000159, AC005576, AC004983, AC006111, AC006050, Z85986, AC005484, AL121595, U95090, AC004841, AP000365, AF001550, AC004019, AC004253, AC006947, AP000514, AC004084, AC007637, AC006468, AL049781, AL050317, AC020663, AF111168, Z98752, AL034429, AC002404, AB003151, AP000688, AC007308, U73167, U90094, AC005399, AC000918, AL117338, AF200465, AC005619, AL031651, AC006211, AP000010, Z99716, AC007371, AL031311, AC004520, AL080243, and AC005943.
HCWUD83	1546	827340	1 - 429	15 - 443	AI657485, N87188, AA825827, U48697, A1243486, U48696, AR018815, AF045432, U39066, AL031276, AC004223, and AC004596.
HCWUD85	1547	529221	1 - 282	15 - 296	AC004582.
HCWUD93	1548	574856	1 - 305	15 - 319	
HCWUF05	1549	849929	1 - 213	15 - 227	
HCWUF30	1550	691734	1 - 458	15 - 472	AA585101, A1525431, A1525556, A1540967, A1541374, A1541365, AA585476, Z30131, A1541535, AA585439, A1541514, D61254, T23957, R29445, R28735, A1557731, C16300, T23985, AL037436, AC037435, A1541523, A1546891, A1547039, A1525306, A1557731, C16300, T23985, T41289, R29177, A1525316, A1546945, A1526073, Z28355, A1557807, AL040463, AL039915, AL043612, AL041197, AL040155, AL041346, AL041096, AL047012, AL041358, AL041277, AL041163, AL041098, AL040621, AL043538, AL041324, AL040464, AL04162, AL041086, AL043496, AL041296, AL041233, AL043444, A1541307, A1541017, T23888, AL045725, A1525320, AL041140, C16305, AL040193, A1557262, AL047219, AL041227, AL047057, A1526140, AL047170, AL040119, AL047036, AL040553, AL041292, AL041051, AL047183, AL040322, AL041131, AL046330, AL041133, AL041238, AL041142, AL045817, AL040529, AL040625, AL040510, AL043467, AL040149, AL044186, A1557782, AL044037, AL040091,

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HCWUF40	1551	703804	I - 313	15 - 327
HCWUF46	1552	656680	I - 435	15 - 449
HCWUF54	1553	933212	I - 232	15 - 246
HCWUF84	1554	686711	I - 162	15 - 176
HCWUG43	1555	697616	I - 388	15 - 402
HCWUG59	1556	573548	I - 396	15 - 410
HCWUG93	1557	920882	I - 229	15 - 243
HCWUH17	1558	662478	I - 280	15 - 294
HCWUH25	1559	677747	I - 397	15 - 411
				AA632445, A142340, T98279, AA719535, and AC004749. AA374775, A1252506, AA643442, AA508298, A1580906, AA834731, H45320, AA223932, A1471887, AA601318, A1016704, A1057350, AA446767, AA643448, AA643444, AA808796, AA643452, AA643454, AA643457, R95060, AA429371, AW169581, T40452, AA501762, H10143, A1205009, A1340641, AA602438, AA090344, H10859, A1039187, AA812094, A1812082, AW265073, AA630834, A1037040, AA341263, AA814778, AA669434, W69364, AA808263, A1298246, AA610491, A1344812, A1932599, A1334464, AW268973, A528603, A1754661, AA493864, AA664790, A127226, AC002364, AC005159, Z93018, AC006213, A1049736, Z99716, AC005972, AF015722, AC007541, AB000880, AC004180, AC004517, AP000507, AB004082, AC004534, AC007556, A1117337, AC007052, A1133445, A1023284, AC008033, A1031132, Z98742, AC005548, AF205588, U91326, AC004448, AC007281, AC007542, A1022313, A1096773, Z85986, AC005901, A1021069, AC004042, AC010206, Z69838, AF196969, AC002544, AC005193, AF165926, A1229041, U57645, Z82181, Z68162, A124731, AC006537, A1031257, AC004558, AC012627, A1031904, AF015720, AP000511, AP000097, A1049776, A1079339, AP000154, AP000012, A1034370, AC000961, AC006487, A1080242, A1049635, AC009721, AC004968, AC005288, AC005841, AC002036, AC004099, Z93020, AC004257, A1022237, AC004508, A1099963, A1031055, A132987, AC005761, Z98950, AC007879, AC003041, A1031659, AC007051, Y11493, AB020715, AC007066, A1031685, AC004024, AP000495, AB016897, A1133163, A1031277, AC005152, AB007955, A1109610, AC006167, A1031057, AC006027, A1021453, AC002551, A1035419, AC006141, AC007324, A1022320, AC005153, AC004849, AC008101, AC004821, AC008079, AC007041, AC006538, AC004125, AC005291, AC004933, A1117342, AC005832, AC005531, A1049777, Z86090, AC005498, AC004934, AC002470, AC004227, AC007240, AF064861, A1033527,

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HCWU1H85	1560	752790	1 - 366	15 - 380	AI460103, AA574077, AL049780, AC007055, Z84469, AC005187, AL133246, AL022163, AP000336, AP000215, AC003667, AP000156, AC004841, AL035653, AC005746, AP000014, Z99496, AC009721, AL021453, AC004024, AC004584, AC004616, AB003151, AP000688, and AL049776.
HCWU1J10	1561	964028	1 - 390	15 - 404	
HCWU1J17	1562	662483	1 - 374	15 - 388	C14614, AI199949, AI189004, AP963707, AA525071, C75012, AJ010597, AC005730, Z69650, AC005516, AC002465, AC005726, Z82190, AC005406, AC005530, AJ006995, U47924, AC006547, Z94277, AC001551, AC005664, AC005859, AC002350, AC005971, AC006013, AL109801, AL049843, AC000075, Z93244, AC005031, Z98950, U80017, AB023048, AP000511, AC002347, AL022723, AC007386, AL122003, and AC004477.
HCWU1K13	1563	656679	1 - 378	15 - 392	
HCWU1K56	1564	733122	1 - 443	15 - 457	AF186189.
HCWU1K77	1565	771883	1 - 513	15 - 527	AC007681.
HCWU1K95	1566	615550	1 - 266	15 - 280	
HCWU1L03	1567	923572	1 - 478	15 - 492	
HCWU1L19	1568	668361	1 - 301	15 - 315	
HCWU1L24	1569	968380	1 - 413	15 - 427	
HCWU1L32	1570	523358	1 - 301	15 - 315	
HCWU1L36	1571	849901	1 - 424	15 - 438	
HCWU1L47	1572	720024	1 - 513	15 - 527	
HCWU1L69	1573	740373	1 - 244	15 - 258	AI657485, N83963, N87188, N83707, U39066, U48696, U48697, AR018815, AF045432, AF011573, AF102850, AJ24486, AF001863, AF061744, X99056, X99055, X99052, Y16299, X99058, X99051, Y07542, X99060, and X99057.
HCWU1L74	1574	690750	1 - 354	15 - 368	
HCWU1N83	1575	527566	1 - 543	15 - 557	F35659, AW074398, AA308806, AI499094, AW069807, F31204, AA365347, AI110770,
HCWU1N05	1576	928191	1 - 287	15 - 301	AI914706, AA558697, AL284640, AL471481, AA515128, AA228329, F36773, F19258, AA318652,

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HCWU081	1578	756978	1 - 439	15 - 453	AC004890, AC005622, AL121655, AC006312, AP000501, AC005321, AC0077934, AL1246003, AC004655, AC005086, AL133448, Z93930, U07563, AC004020, Z95115, AF000555, AC007030, AL133371, AL021154, AC004525, AL031774, AC002551, AC007786, AL035415, AC004491, AC005071, Z99916, AP003147, L78810, AL050318, AC002312, AC005578, Z84476, AC005327, AL109939, AL078581, AL049757, AC002476, AL109984, AC005619, AC008044, AC005412, AL005594, Z99943, AC005088, AL023807, AC000039, AC007917, U63721, AF001549, AC003101, AC006965, AL024498, U85195, AC005288, AL031846, AC005924, AC005081, Z98743, AC006512, AL109623, AF111168, AL049712, AC007637, AF129756, AF001052, AC004832, AL034548, AC006449, Z68273, AL031282, AC005844, AP005557, Z98941, AF124523, AC007421, AL023553, AC006254, AL049869, AF196970, Z98048, AL022163, AL049650, AL049776, AL022476, AL031721, AF030453, AC002300, AC002997, Z93017, AC005914, AC005784, AC004150, AC002563, AC005099, AP000275, AL031255, AE000658, AC002565, AC004257, AP000355, AL031685, AL031283, AC004913, AC007731, AC004777, AC006536, AC004967, AC006509, AC005755, AC005500, AC006966, AL031311, Z99716, AC003033, AC005971, AP000252, AC004611, AC006050, AC007226, AF024533, AF126403, AC005067, AC006950, AL109847, AC006261, AC004382, AL008715, AC001848, AP000553, AP000105, AP000037, AC005746, AC004584, AL109628, Z93244, AL121825, AC007707, Z85980, AC004448, AC005049, AC002302, AC004084, AC005399, AC004815, AL022313, AC007283, AC004360, AL034402, U95739, AL021940, AC002997, AC004928, AP000406, AL049653, AL035400, AC001231, AC004813, AC006211, Z83851, AL034423, AC004883, AC006160, AC004755, AL022316, AL021603, AC005726, AC004209, AC005874, AP000121, AF134471, U91323, AL109798, AC007868, AC007011, AC002368, AL136168, U73634, AC005779, AC004905, AL031845, AC002544, AL049576, AC007240, AC008123, U29895, AC008033, AC008018, AC007686, AF184614, AC002314, and AC005972.
HCWUP64	1579	746328	1 - 264	15 - 278	AW440373, AW139492, AC004150, Z98747, AC007204, and AC006539.
HCWUQ02	1580	968431	1 - 483	15 - 497	AB67485, AF102850, AF001863, AF061744, AF045432, AL243486, U39066, U48696, U48697, AF011573, and A70147.
HCWUQ77	1581	719064	1 - 379	15 - 393	AD054414, AF001552, AC005209, AC006312, AL022313, AF134726, AL009181, AF109907, AC005940, AL021937, AC002477, Z99716, AC005288, AC004382, AP000553, AL11168, AL022315, AC007227, AP000557, AC004975, D87675, AL034420, AC004922, AL031311, AC004149, AL022320, AC005081, AC006241, U07563, AL031255, AL008582, AC008372, AC004447, AL080243, AL035495, AL022327, AC005696, AC005067, AL031281, AC005300, AC005102, AL031602, AC005057, AF030453, AC004876, AC005565, AF196774, AC004841, AC005264, AC016830, AC005335, AL034423, AC005730, AC003038, AF129756, AC004883, AC0066211, U662293, AL133448, AB023049, AC005484, AC004531, U89337, AF005088.
HCWUQ77	1582	714529	1 - 542	15 - 556	

					AC006538, AC005874, AF134471, Z73359, AC006449, AC004796, AC006344, AC007216, AC005899, AC002425, AL034417, AL031005, AC004150, AC006480, AC005619, AC006026, AC005089, AC007308, AL049569, AL035681, AP000556, AL049539, AC005519, AF196969, AC005280, AC007686, AL035587, AP000115, AC005193, AC002301, AC007421, L788310, AC003007, Z83844, AC005531, AC007387, AL031666, AL049757, AF031078, AC004685, AC005015, AC004854, AC002375, AL031589, AC005261, AC016027, AC005190, AC002404, AB003151, AP000142, AP000248, AC005377, AC006273, AC005225, AF030876, AC005666, AP000689, AL035249, AC009330, AL035072, AP000305, AC009247, AC004752, AC008101, AC004263, AC009516, AC005670, AL049636, AL021546, AL021155, and AL031662.
HCWUR83	1583	958776	1 - 379	15 - 393	AL361673, AC002094, and AC005955.
HCWUR95	1584	711186	1 - 492	15 - 506	
HCWUS02	1585	919224	1 - 292	15 - 306	AL914239.
HCWUS29	1586	690351	1 - 615	15 - 629	AA165563.
HCWUS63	1587	542330	1 - 445	15 - 459	AL652927, AB002803, AP000241, AF124731, AP000201, AP000097, and AF026109.
HCWUS72	1588	855815	1 - 318	15 - 332	AF097485, and AC005089.
HCWUT24	1589	676902	1 - 386	15 - 400	AL653905, H73720, AA080863, AA069022, M78005, AL300507, AL031228, AC006130, Z96641, Z85986, AC005089, AC004106, and Z96498.
HCWUT46	1590	861836	1 - 474	15 - 488	AA122111.
HCWUU04	1591	614859	1 - 348	15 - 362	H82979, F00112, AA662982, AP063797, AA516310, AL199949, AL189004, CL4614, AA524604, N59038, AC004242, AC007666, AL031670, AL021918, AC004797, AP000346, AL109914, AC004020, AC003667, AC004019, AC005529, AC006449, AF165926, AC004887, AL008723, AL133163, AC007371, U47924, AC005214, Z93023, AC005288, AC006014, AC007055, AC004477, AC007263, U82828, L44140, AL109623, AB023054, AC006547, U80017, AC005664, AL021707, AC000075, AC004081, AC005071, AL031293, AC005031, Z85987, AC005057, AC005752, AC007686, AF205588, Z93017, AC000003, AC004057, AC004929, Z95113, AL008718, AL121652, AC005317, and AL031229.
HCWUU07	1592	861959	1 - 496	15 - 510	
HCWUU16	1593	661570	1 - 307	15 - 321	AA525331, AA431350, AA431634, AA705118, AA526092, AA665517, R79654, W92302.
HCWUU58	1594	735736	1 - 223	15 - 237	AL733600, AL821775, AA225548, AC007372, AC004802, AC004911, AC006277, AC002395, AC004056, AL133289, AC002394, AL031848, AC004832, AC004752, AL049823, AF019664, AL031657, AL035703, Y13901, AL023807, and AB016897.
HCWUU78	1595	574908	1 - 433	15 - 447	
HCWUV17	1596	662485	1 - 340	15 - 354	AL064787, AA669618, AL560413, H82557, AL525319, AF169482, AA525464, AA765736, AA478355, AA974503, AA737432, AL174766, AA610491, AA502866, AA468131, T47970, AW149313, AL866856, AL223604, AW002350, T86545, AL093030, AA846952, AW023389,

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HCWUV24	1597	676099	1 - 386	15 - 400
HCWUV28	1598	686171	1 - 552	15 - 566
HCWUV65	1599	676334	1 - 359	15 - 373
HCWUV76	1600	615554	1 - 337	15 - 351

HCWUW01	1601	915860	1 - 493	15 - 507	AA368835, H59296, H96676, H85763, H84047, AV069273, AP000331, AP000172, AP000057, AP000125, AC004109, AC007687, AF126403, AL035458, AP000688, AC004801, AL035249, AP000687, Z46936, AC005697, AC002425, AC006132, AC005015, AP000439, AP006501, AC005070, Z98950, AC004582, AC007240, AC005887, AC004854, AC004893, AC007535, AL035079, AC007999, AL031729, AP000280, AL031587, AC007637, Z99291, AL049760, AC009263, Z99497, AC007114, AC005871, AP000107, AL031281, AC002472, AL034561, AP000694, AC007664, AB002059, AC007207, and AC004835.
HCWUW55	1603	964086	1 - 538	15 - 552	
HCWUW58	1604	694016	1 - 348	15 - 362	
HCWUW69	1605	882383	1 - 378	15 - 392	AC010436.
HCWUW76	1606	769808	1 - 535	15 - 549	
HCWUW84	1607	782840	1 - 349	15 - 363	
HCWUW90	1608	712303	1 - 365	15 - 379	
HCWUW95	1609	706528	1 - 369	15 - 383	
HCWUW02	1610	852993	1 - 541	15 - 555	AC005247.
HCWUW25	1611	614857	1 - 405	15 - 419	W86785, and R09187.
HCWUW78	1612	773336	1 - 451	15 - 465	AC007708, AC009288, AC008132, AP000550, AP000552, AC007664, AC007325, AC007981, AC008018, AC012330, and AC005815.
HCWUW16	1613	661550	1 - 527	15 - 541	AW189204, H64247, R89015, H73207, H62796, H62711, H73281, H95089, T99705, H77855, H77907, R84881, AA203271, and H64246.
HCWUW19	1614	922920	1 - 1082	15 - 1096	
HCWUW26	1615	681249	1 - 309	15 - 323	
HCWUW41	1616	711771	1 - 286	15 - 300	
HCWUW69	1617	615630	1 - 538	15 - 552	
HCWVA18	1618	849894	1 - 350	15 - 364	AI499795, and AW002986.
HCWVA25	1619	754314	1 - 187	15 - 201	N88601, N84855, N83168, N86694, AA095159, AA096066, AA096046, N81993, AA247827, N88782, N83992, N84712, N84048, N84718, N88518, AA095641, N55698, AA247964, N83991, N84830, N89520, AA471338, H58760, N84829, N87898, N87989, N56555, A1243486, U48696, U39066, AF039698, AR066487, AF103726, AF102850, S78798, AF032922, and AF045432.
HCWVA44	1620	716347	1 - 122	15 - 136	
HCWVW94	1621	793533	1 - 659	15 - 673	H57015.
HCWVW59	1622	770274	1 - 438	15 - 452	
HCWVW65	1623	747324	1 - 175	15 - 189	
HCWVW67	1624	772342	1 - 328	15 - 342	AA251067.
HCWVW69	1625	861830	1 - 465	15 - 479	AC002536.

HDCAC05	1626	975255	1 - 457	15 - 471	AL134902, AI142131, AL134536, AL119401, U46351, AL119341, AL134527, AL134526, AL119418, U46349, AL043019, and AR054110
HDCAD10	1627	963330	1 - 489	15 - 503	AW272294, AI923458, AI870453, AI635028, AI762528, AI133514, AA565319, AI923451, AI860751, AI923458, AI279417, AI587467, AA133332, AA160363, AI282629, AA877992, AW243793, AI1192440, AA528503, AA528574, N64587, AC007371, AC006241, AC005081, AC004125, AC005696, AC005015, AC007363, AF001548, AL023575, AC005189, AL022323, Z99716, AL049760, AC006511, AC006441, Z95114, AL049569, AC005082, AC005011, AC002288, AC005874, AF134711, AB026898, AC002404, Z85986, AF196970, AC000516, AC002471, AC004905, Z99128, AC005529, AC006965, AC005921, AC007878, AL139054, AL022313, AI109984, AC007285, AL035071, AL034420, AC002314, AC004813, AL022320, AC005839, AL050307, AC006958, AC006312, AB023048, AC002352, AC007055, AC005280, AL021807, AC004882, AC005089, AL049872, AC004491, AC005484, AP000044, Z98941, AC004895, AC004531, AC006121, AL136295, AC007773, AP000697, Z83840, AP000098, AC005409, AC008009, AL035703, U62631, AC004782, AC003378, AP000209, AL049829, AC004686, AP000112, AC002425, AC005578, Z83844, AL022326, AL049832, AL049780, AC005231, AC004910, AC005527, Z97053, AL031311, AC007327, Z83847, AF067844, AC006480, AC004983, AP000696, AC004903, AC007938, AC005697, AL132777, U47924, AC004805, AL031657, AP000248, AF002223, AC004067, AC005943, Z93016, AL096773, AC004966, AL117337, AC005086, AC005237, AL031848, AC005516, AC005755, AC007182, AC005412, AC003695, AL035209, AC006946, AL021707, AC004655, AC008038, AF196971, AC005519, AL049643, AC007225, AL023284, AF001549, AC000026, AC006512, AF181896, U91322, AC002546, AC003108, AC005520, AL009181, AL049576, Z82244, AC004659, AC004797, AC003962, AC004099, AC004098, AF045555, Z81365, AC010200, AF020558, AP000694, AP000568, Z98946, U91326, AC004854, AC004033, AL034379, AC004821, AP000692, AL031670, AL049776, Z99208, AC000025, Z85987, AF030453, AC005255, AL122020, AE000658, AL031597, AC005537, AL022336, AP000086, AL133245, AP000313, AC004967, U91321, Z98304, AC007637, AC006597, AF047825, AC005971, AC002070, AL022401, AC004743, AC006604, AC005088, Z84469, AL021939, AC005207, AC007193, and AL096766.
HDCAG86	1628	852970	1 - 389	15 - 403	
HDCAP64	1629	922818	1 - 343	15 - 357	
HDCAV79	1630	881404	1 - 483	15 - 497	AL035541.
HDCAY54	1631	959750	1 - 430	15 - 444	
HDCBO38	1632	961931	1 - 214	15 - 228	
HDDMA83	1633	926991	1 - 759	15 - 773	AW371972, AA85936, and AF038963.
HDDNY79	1634	933804	1 - 443	15 - 457	AL049569.
HDDOC53	1635	934157	1 - 879	15 - 893	AF150417, AI888578, AI826769, AW327712, AI68059, AA628915, AI884992, AA761358, and

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HDLAC80	1636	799887	1 - 302	AL035461
HDLAD61	1637	775541	1 - 388	D82449, AA079011, W15176, D82382, D82521, AF077040, and AF073344.
HDLAH25	1638	796174	1 - 323	AA404215.
HDLAK03	1639	923285	1 - 201	AL047643, A1499503, F32734, AA715268, AA683031, A1744739, AA641103, N48131, A1923140, A1341664, A1061591, A1114660, AW157326, F36273, A1890928, A1890570, AA362700, AA847216, A1914706, AA364567, AA551509, A1070201, A0704398, F35113, AA515051, AA658235, A1613261, A1205126, A1041706, A021857, A1553983, AA715362, AA669416, A1608626, AA484148, AA434065, AA578961, AA715270, A1445117, A1955323, F19258, A1624698, A1143242, AA354507, A471572, AW193265, H64777, A1709365, W03190, AL079683, H04821, A1510838, AA514737, A1792287, A1310138, AA580662, A1149915, AW340922, A1432270, A1264743, AA328591, AA333072, A1051551, N43757, AA630352, F28576, A1937850, A1509086, AA973575, A1358343, AW341892, AA548137, AA318652, D58782, A7337985, AA450199, AA878495, AA458804, A1079910, A7130799, A921649, A1445436, A1890052, A1963786, AA569306, A1880168, A1376100, A1079645, AA601270, AW265654, AL1379719, A1110770, T06656, AW074059, A1356904, A1922654, A1564284, R44592,



AL042856, AL284640, R79496, AL570138, T56067, AL557323, T63104, AA5843450, AW406059, AA526765, N54179, AA344959, AA225201, AL732498, AL160117, AL859251, AL002536, AA226364, AL708009, AL859742, AL471481, AA985038, N69962, AL138265, AL003172, AL719014, F31204, AW188544, AW302117, AL904894, AF150152, AL036523, F35311, AL349874, AW276827, AL334435, AA317973, AL440464, AA308806, AL565582, AL635818, AL287964, AW459839, AL042771, AA515128, AL041368, AL679379, AL499094, AL888405, RI13151, AL287528, AL369477, AL679888, N41759, AL252085, W60516, AA557879, AL252114, AP000155, AP000013, AC006050, AL133371, AC005053, Y18000, AC002056, AC0040810, AC004539, AC009178, AC005529, AC006538, AC004998, AL049697, AC004884, AC002116, AC001070, AL10505, AC004806, AC007695, AP000555, AL078621, AC004745, AC003678, AC003689, MI3254, AC003104, AC004682, AL031720, AC004675, AC007402, AC005694, AL005562, AC005527, AL033525, AC004492, L34162, AC007731, AC007537, AC005500, AC003007, AC006023, AC009405, AC005632, AF088219, AC003038, AC004447, AP000745, AP001172, AC006480, U55184, Z93783, AF139813, AC004057, AF123462, AC005899, AC0040770, AC004228, AC005562, AC006515, AL035659, AB020668, AL096702, AC004749, AC005064, AC003982, AC005886, AC002347, AL049636, AC005094, AC0010205, AC005409, AC005069, AC005575, AC006537, AC005783, AC006271, AC004230, AL078623, U60601, AC006948, AC005785, AC006116, Z99774, AC007064, U62317, AC005358, AC005726, AL003548, AL118497, AC004859, AL096867, AC004645, AC005091, AC005856, AC005486, AC005076, AC009542, AC009330, AC006111, AC002429, AL135879, AL21790, AC0010072, AL031432, AC005399, AC018769, AC018767, Z95889, AL031427, AC004988, AB029022, AF180425, AC005725, AC008059, AL021977, AC007536, Z98752, U07563, AP000477, AC002400, AL050318, AC004478, AL049778, AL050307, AP000552, AL031289, Z83838, AC004447, AC020663, AL031283, AF001549, AL109758, Z95114, AC005529, AL031123, AC005912, AP000280, AC003959, AC004989, AC005057, AP000107, AP000039, AC004223, AL031005, AC004908, AL027272, Z98946, AC002076, AL024507, AC005940, U95743, AC002426, AC005368, AL023578, AF111169, Z97183, AC007786, AP000306, AC005765, AC005793, AP000047, AF176915, AC004964, Z93096, AP000115, AC002375, AP000692, AL008706, AL035400, AL031276, Z83826, AC005599, AC005913, AC0010220, AC004890, AC005037, AC007207, AL229043, AC004822, AC005747, AP001135, AC005197, AC005255, AC000066, AP000072, AC001068, AC005839, AC004907, AC005519, Z82206, AC005730, AL0010770, AL135783, AC006241, AC002565, AP009965, AC011598, AP000952, AP0001053, AL049845, AC005370, AC003662, AC005866, AF111170, AL080243, AC007738, AL1177340, AL008718, U85195, AE000658, AC004760, AC002994, AC009336, U95740, AC006285, AC007228, AL021978, AC006367, AL050326, Z75754, AC002519, AC004969, AL035420, AL239321, AC005152, AC005385, AC004099, AC006006, AC005482, AC009275, AF070718, AC006064, AL034452, AL031662, AB020876, AC005969, AC016025, AC007225, AC006004,
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					AC018633, AC005951, AC002553, AF000553, AL110502, and AL023879.
HDLAN36	1640	923478	1 - 85	15 - 99	
HDLAO27	1641	787084	1 - 422	15 - 436	
HDLAQ50	1642	723854	1 - 307	15 - 321	AI581067.
HDLAR24	1643	943930	1 - 305	15 - 319	
HDLAR29	1644	922276	1 - 393	15 - 407	AI220255.
HDLBB03	1645	923286	1 - 327	15 - 341	AF162761.
HDMAQ15	1646	941282	1 - 1134	15 - 1148	AI141684, AA242853, AI281834, N50984, AW014432, AA826047, AA977801, AA984041, T64272, AA994205, AA252172, AI361098, T64144, AI280735, AW084330, AA931748, AW071613, R09320, AA448980, AI990634, R09211, AW588104, AI147841, AI198101, AW238793, AI627898, AW074546, AW072130, AI276023, AI394689, AI457707, AI953242, AI539262, AA947158, AI150147, D44958, AA034918, and AC004126.
HDMBH76	1647	883212	1 - 1214	15 - 1228	AA584604, R17976, and AA297873.
HDMBK12	1648	968954	1 - 424	15 - 438	
HDPAAB09	1649	693445	1 - 501	15 - 515	H51802, H67354, T67670, AA700794, AB029488, and AC002536.
HDPAAB03	1650	924124	1 - 356	15 - 370	AI078600.
HDPAAD22	1651	674560	1 - 470	15 - 484	AI492865, AA830291, and Z59212.
HDPAE86	1652	709072	1 - 505	15 - 519	H49713, and T87022.
HDPAF70	1653	881626	1 - 452	15 - 466	
HDPAF03	1654	771636	1 - 216	15 - 230	
HDPAAG32	1655	947832	1 - 627	15 - 641	AC005946, and AC006272.
HDPAH10	1656	969041	1 - 516	15 - 530	T97458, AA704961, AA704993, T97730, R09226, AI097092, AI264637, AW440517, T97914, AA203274, AA045417, AA127626, AA308065, T96809, F22528, AA304050, AA082078, AI087224, W39584, AI042559, N32838, AI289816, AI333981, AA513003, AA121528, AA716353, AA302332, AI805206, AA677140, W44935, AI208270, AA112905, AI024761, AI087291, AA448463, AA101212, AI685445, AI094396, AA932240, AA331180, AA062780, N42284, AA045311, and AA0973273.
HDPAQ24	1657	677179	1 - 425	15 - 439	AF221944, AF110330, and Z61018.
HDPAAS40	1658	860041	1 - 567	15 - 581	AC003004.
HDPAV74	1659	916457	1 - 396	15 - 410	
HDPAZ46	1660	719024	1 - 434	15 - 448	
HDPAZ73	1661	756742	1 - 496	15 - 510	AI734217, AI830204, AI764987, W20302, AA328526, AI344107, AI686557, K54083, AA334776, AA151813, AI921148, AA815201, AA386170, AA122312, AI361541, AI281342, AA071290, AI284343, R60683, AA399256, T36239, N23786, T65297, AA779556, AA425224, AA350782, AW004629, AA888883, F02683, F10790, F03793, R41712, H29594, N46213, R39944, R40964, R48971, R44252, R44573, R50366, AF182814, and AI243721.

HDPBC24	1662	760623	1 - 340	15 - 334	AI401449, AA075859, D26362, AC000391, and AC002323.
HDPBD79	1663	973367	1 - 159	15 - 173	AI003449, AI970509, H23104, N45556, AL040461, AI216346, AA927218, AA912892, AI078614, AL137712, and AL109748.
HDPBJ94	1664	943460	1 - 810	15 - 824	AA296462, AA223692, AB023188, Z54728, and Z54729
HDPBM64	1665	773091	1 - 397	15 - 411	AI721185, AI066646, AA700943, AW023111, AW070532, AI249997, AI471476, AI362442, AI357628, AI955029, AI305547, AA663074, AI755202, AW089016, AA502707, AI309042, AI039041, AA721722, AI061313, AW028950, AL042373, AA837035, AA602906, AA569402, AI821094, AC005015, AC009501, AC005228, AC004878, AL096701, AC007193, AI049540, AC004813, AC002997, AL021937, AC005914, AC004897, AC005562, AC002381, AL117258, AC005088, AC005747, AC004832, AC006285, AC002544, U8H017, AC007308, AC005599, AL034548, AF200465, AC007199, Z86090, AC007546, AC005921, AL021393, AC008033, AL133246, AC006312, AC002316, M63796, AC007226, AF111169, AC006597, AF196779, AC004883, AC004125, AL049843, AL121652, Z93023, AL035249, AL078581, AI010770, AC004912, AC007227, AC004999, AL049779, AF196969, AL096774, AC005082, AC005031, AL035587, AP000304, AL035413, AC004534, AC004806, AL096774, AF196971, AC002115, AC004796, AC005873, AC007052, AC006948, AF124523, AL121653, AP001054, AC004638, AC006241, AC005102, AC004587, AL022097, AC005786, AP000509, AC005058, AC006430, AC007540, U07000, AF107258, AL133448, AC004223, AC010205, AC006211, AC003109, AL049697, AL121595, AC005412, AL049757, AL117328, AC005844, AC008101, AC005722, U95742, U63721, Z99496, Z83840, AC003963, AC000134, AC000392, U62292, AC005696, AF053356, AC003684, AP000047, AL022318, AL049712, AC005409, AC007011, AL049766, AB023051, AL080243, AC005280, AB023049, AC004953, AF001548, AC004881, AC005500, AC004216, AC004520, AL024507, AC002400, AL022311, AL109801, AC005776, AL133353, AP001053, AL022329, AC006509, AC005209, AC004973, AC004991, AC007731, AC004989, AC007994, AC004263, AC016830, AF121781, AC004383, AC008055, AC005695, U96629, AP000513, AC002091, AC000092, AC004910, AF111168, AL049795, AC005920, AC007298, AC002073, AL049650, AL031659, Z98884, AP000115, AC000353, AC003663, AC005089, AL031282, AC004671, AC004025, AL049569, AC006530, AC007041, AC007934, AC007637, AL049869, AF109907, AC005519, and AC004551.
HDPBW10	1668	964553	1 - 460	15 - 474	AL045848, AA382534, AI832000, AI292085, AI264046, AI251024, AI446205, AW270768, AW008074, AI494975, AI291037, AW302709, AW271774, AW236235, AA219651, AI078409, AI803915, U91326, AC002544, Z93942, Z83826, AP000105, AP000037, AC000353, AC009599, Z93931, AL031286, AI229042, AL13243, AP000092, AC003962, Z83843, AC004386, AI031728, AC005239, AL021154, AP000150, AC006123, AF107885, AF000009, AC004202, AC002310, AC007565, AL022316, AC007684, AC007676, AF047825, AL026997, AL049776,

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HDPBW26	1669	670345	I - 240	IS - 254	AC007172, and X84692.
HDPBX82	1670	779848	I - 533	IS - 547	AI478349, AIf624865, and AC005336.
HDPBY23	1671	858345	I - 505	IS - 519	AA004919, ICl6939, AW301353, and T06985.
HDPCC48	1672	709005	I - 423	IS - 437	
HDPCH65	1673	950716	I - 493	IS - 507	AA284452, and AL135744.
HDPCK27	1674	683383	I - 450	IS - 464	
HDPCK66	1675	766231	I - 432	IS - 446	
HDPCKM35	1676	973352	I - 455	IS - 469	AL096805.
HDPCKN22	1677	927838	I - 610	IS - 624	H81040.
HDPCKN94	1678	794275	I - 753	IS - 767	AL122086, AF120323, AB022915, AF120324, and AF121102.
HDPCKR34	1679	852871	I - 327	IS - 341	
HDPCKS43	1680	714479	I - 299	IS - 313	
HDPCKV60	1681	720278	I - 846	IS - 860	
HDPCKW90	1682	612234	I - 427	IS - 441	AT62468, AA039789, AA039790, AI040678, AW044237, R69130, W80467, R69248, N69997, R66283, R799469, R80067, R66282, R08901, and W80576.
HDPCKY03	1683	924057	I - 455	IS - 469	T86522, R05896, and RU1279.
HDPCKY43	1684	958157	I - 468	IS - 482	AF118808.
HDPCKY93	1685	571375	I - 431	IS - 445	N44631.
HDPDIF78	1686	773556	I - 362	IS - 376	AB014599.
HDPDIJ24	1687	677166	I - 376	IS - 390	AF150205, R94203, and AF161539.
HDPDIQ60	1688	735027	I - 442	IS - 456	AP040403, AC005363, and AC005606.
HDPDLI92	1689	691647	I - 647	IS - 661	AA573618, and U81831.
HDPDLT79	1690	774943	I - 570	IS - 584	AW177005.
HDPDN08	1691	959332	I - 927	IS - 941	AA216672, AA078092, AA829049, and AC007444.
HDPDO46	1692	7190110	I - 449	IS - 463	AA808002, AA467766, AC007276, AL031630, AL096861, Z84480, AC002525, AL031575, AP000569, and AL035073.
HDPDFC15	1693	745045	I - 195	IS - 209	
HDPDFE07	1694	974494	I - 798	IS - 812	AB033030, and AF151363.
HDPFEJ21	1695	852824	I - 376	IS - 390	AL034555.
HDPFC093	1696	772456	I - 373	IS - 387	AL049766.

HDPEV55	1697	575202	1 - 544	15 - 558	AA833892, R84376, and AA382114
HDPEW80	1698	734937	1 - 495	15 - 509	
HDPEY90	1699	788870	1 - 353	15 - 367	AW404640, AF150417, AL023653, and AL049683.
HDPEZ58	1700	735975	1 - 515	15 - 529	AL134996, AB018413, and AB011143.
HDPCB73	1701	574603	1 - 355	15 - 369	
HDPCG28	1702	625678	1 - 446	15 - 460	
HDPCGH27	1703	937144	1 - 315	15 - 329	AA362688, AA362690, AA362689, T29199, AL044652, 107209, 107249, AR068510, AR067734, AR067731, AR068509, AC3954, 109267, 109270, 109268, 109269, A49701, 109252, 109251, AR067732, A29109, A32111, 166495, AR068550, A23373, AR068551, 166494, E01324, 108638, A94048, A94061, AR035224, A94046, A94054, A94045, 158322, 158323, 166498, 166497, 166496, 166487, A27169, A27170, A39929, A83151, AR038307, AR038321, AR051528, AR051547, AR051537, AR051524, and A42964.
HDPCG14	1704	415961	1 - 432	15 - 446	AL018392, AA576672, H84975, A1929768, AW157282, AA599045, H77773, AA847622, AA828053, AA826320, AA598731, AC003982, Z84466, AC005102, AC003665, AC002350, AF126483, AC004752, AL022238, Z98257, AC005105, AL135783, Z98742, Z86064, AP000289, AP000042, AP000110, AC0007537, AC0005381, AC004685, AC005015, AB020868, AC006581, AL080243, AC004000, AC004797, Z82976, AC005971, AC006026, AC005280, AC005736, U47924, AC001234, AC004526, U93305, AL031905, Z83822, AL049874, AL023575, AF060568, AL022717, Z84487, AC006241, AC006011, AC007671, Z99916, AL031673, AP000350, AC005886, AF001549, AL049631, AC005031, U80017, AC007193, AC002477, AC005932, AC002470, AF198095, and AF091512.
HDPCG21	1705	760926	1 - 340	15 - 354	
HDPCG195	1706	910792	1 - 443	15 - 457	
HDPCG165	1707	666830	1 - 515	15 - 529	
HDPCG85	1708	783563	1 - 451	15 - 465	
HDPCG30	1709	780359	1 - 408	15 - 422	
HDPCG52	1710	852800	1 - 422	15 - 436	AA287508, W15561, and N80792.
HDPCG54	1711	464312	1 - 669	15 - 683	AL031123.
HDPCG75	1712	872249	1 - 409	15 - 423	AP000172, AP000057, AP000125, and AP000330.
HDPCG143	1713	495783	1 - 547	15 - 561	AF00109, AA468022, W60328, AC002470, AC005529, AC005666, AF055066, AC009516, AF053356, AL096791, AC007308, AC005940, U47924, AC005071, AC004638, AL022238, AC005690, AC005057, AL008715, AC005527, AC004263, AC004814, AC007919, AC005387, AC005829, AC000353, AF045555, U95740, AC005695, AF207550, AL022224, AC004156, AL031587, AC004921, AC009044, AL031295, AC005914, AF165926, AC007066, AC002378, AL136295, AC012627, and AC005694.
HDPCG150	1714	720595	1 - 330	15 - 344	

HDPCX44	1715	683277	1 - 454	15 - 468	
HDPHB75	1716	915912	1 - 127	15 - 141	
HDPHF59	1717	677172	1 - 211	15 - 225	
HDPHG23	1718	416041	1 - 312	15 - 326	
HDPHG42	1719	732133	1 - 602	15 - 616	
HDPHG89	1720	733198	1 - 588	15 - 602	
HDPHH51	1721	921093	1 - 471	15 - 485	AW408550, AW408705, AW407027, C18204, AW401857, AL031733, and AL137762. AC005005. AA447601, A1769676, A1052170, A1383501, AA416632, T99484, AW237237, AA652361, AA652166, A1202729, AA115105, AA356475, AA828854, and AC005156.
HDPHI02	1722	919825	1 - 448	15 - 462	
HDPHI71	1723	760325	1 - 391	15 - 405	
HDPHJ36	1724	706624	1 - 301	15 - 315	
HDPHK96	1725	921957	1 - 815	15 - 829	AA654874, A1380617, AW780933, AW243945, A1355080, A1148557, AA564582, A1718462, AA445908, H73550, AA678616, A1683116, H67649, H48768, AA405549, AA297789, AA086257, AA936718, AA078754, AA599532, AL041682, A1924207, AL042230, A1912401, A1816058, A1732911, AA3200105, W041668, AL041681, F35551, AW051819, A1858889, A1055784, A1509401, AA584207, AA878407, AA904211, A1270647, A1061168, AA128969, H97379, AA669054, F31867, AW070330, AA558404, AA493947, AA302982, A1955360, AA471013, A550757, AA345594, AA715955, A1053688, A1671077, AA425924, A1678992, A1792521, F32040, AW078821, AA572753, R99613, AW390284, A1347665, W81372, H68191, F25666, AA644223, AA460910, A1697425, AA581498, AA386433, F35674, A1472736, A1819262, N400927, H67064, AA019973, AA745552, AW440568, AA635413, AA013168, A1198718, AA460920, A1857422, AA678932, A1818545, A1753887, AA344768, AW081610, AA721523, AA461212, N86362, A1866580, N67313, A1701059, AA513884, AL134440, A1570237, A1620354, AA461223, A1889995, F35684, AA058312, AA420723, T17384, AA804334, A1133514, AA126814, AL040521, A1370841, AA831913, AA419389, A1114557, AW275432, AA640310, AA515351, R93919, A1118912, AA652830, A1889579, N58505, AA487300, AW079737, AA601237, AA102737, AA249239, AL044177, A1002709, AA626595, AL121287, A1813783, AA568314, AA355128, AW019964, AL045423, AA504951, AA804297, AW023111, AA583132, T17332, AA551056, AA609826, AC004637, AL031984, AL022330, Z94160, AL133500, AC004032, AC002563, AL031775, AC010582, AL033380, AC006948, AC006276, AC004125, AC008119, AL031432, AC006023, AL031279, A1E000662, AC006120, AC004111, Z83846, AL035682, Z98742, AL078638, AC002070, A132444, AC004943, AL021939, AP000327, AC003108, AC006511, AC008149, AC007684, AC006241, AL021546, AC002303, AP000123, AP000055, D84401, A132826, AL035588, AL031228, AL049911, AL022576, AL121578, Z70289, AR036572, U91328, U93305, AL049832, AC004601, Z97053, U52111, AC005220, AC002375, AL022721, AC004593, AC003683, Z95115, Z98048, AF196779, AC004820, AC007221, Z92542, AC005969, AC004465, AL050317, AC005495, X51956, AL117694, AC006512, AP000075.

				AC006390, AL022238, AC005215, AC007263, AL049749, Z84480, AC005684, AC002115, Z81008, AC002350, AC005355, AC006361, AL031728, AC006125, AC005487, AC007388, AL031311, Z94055, U47924, AP000496, AC005209, AL020998, AL109738, AC003684, AP000114, AP000046, AC010200, AC003965, AC005379, AL079333, AF1196969, AC005225, AC005219, AC005726, Z85996, AC005187, AF015416, AC008989, AC004049, AL035703, AC007151, AC005288, AC005625, AC005568, AC003013, AL049576, AL049869, AC004762, AL031427, AC007663, AC010206, AC005553, AC007225, AF128893, AL109750, AP000049, AP000311, AC007387, AC006057, AL022332, Z69652, AL012008, AC005061, AC007934, AC003665, AL132796, L31948, D87022, AC004663, AC006600, AL031055, AC004854, AL121588, AL022726, Z69922, AC005514, U63312, AL022395, AC002112, AL132800, AL031121, AL009172, AL117258, AC007279, Z82176, AC004963, AC006205, AC006039, AF047825, Z75407, AL049692, AL049570, AC002073, Z83851, AC007201, AC007358, U44106, AC007617, AC002045, AC005546, AP000504, AC004997, AC002481, AL035462, AC007649, AC004651, AC002314, AC015853, AL031587, Z93242, AC005324, AC004832, AL022069, AC010205, AC007540, X15943, X68793, AF199339, AL023879, AL023883, AC006636, AP000701, AL031258, AP000115, AC005081, AC000003, AL031289, AC005585, AC005939, AL022313, AC004923, AC002455, AC005094, AL135746, AL009181, U4294, AC005391, AF030453, Z84487, AP000304, AC005049, AC005690, AC005728, AC005015, AL022326, AC003010, U73169, AL031665, U93036, AC002385, AL011931, AC005284, AC004019, AC005082, AC006480, AC007023, L43411, AL035416, Z82244, AF111169, Z93023, AF024534, AC004257, AC004760, AC004262, AL239318, Z84474, AC005839, AL031664, AC004821, and Z70288.	
HDPIA15	1726	772020	1 - 588	15 - 602	AL035582, and AL040766.
HDPIA37	1727	954869	1 - 680	15 - 694	AL1470828, AA888031, AL120421, AA229902, AA281976, AA204701, AA424801, AA410294, AA435831, AA397595, and AB002334.
HDPID10	1728	928163	1 - 547	15 - 561	H78846, R97122, AA331528, T85509, AW362954, AL193875, AW362978, AL193991, AA699647, AW362953, AL033788, AW363023, and AC005412.
HDPID37	1729	868169	1 - 554	15 - 568	
HDPIE42	1730	713081	1 - 389	15 - 403	AL120078, N28089, AA206257, AW378916, AL117258, and Y18483.
HDPIF86	1731	591540	1 - 488	15 - 502	AL022316.
HDPIH48	1732	677664	1 - 511	15 - 525	
HDPII26	1733	681519	1 - 515	15 - 529	T84946, AL047527, AL047528, and AC002394.
HDPIQ55	1734	961163	1 - 458	15 - 472	T81944, T79115, and H63342.
HDPIQ65	1735	747791	1 - 426	15 - 440	AL732675, AA469134, and AA420876.
HDPIU53	1736	926498	1 - 371	15 - 385	
HDPIU61	1737	741724	1 - 408	15 - 422	AC004126.

HDPJA04	1738	628745	1 - 318	15 - 332	AW245495, AL046917, AW040628, H91107, AR012155, AB018357, and AB026628.
HDPJA26	1739	767110	1 - 455	15 - 469	AW161153, AW161055, AF150432, AL136504, AF189723, AF181121, AF181120, and M93017.
HDPJB08	1740	9211453	1 - 403	15 - 417	
HDPJB05	1741	911170	1 - 2838	15 - 2872	AA905416,
HDPJK06	1742	852781	1 - 438	15 - 452	AI928173, and Z95115.
HDPJK73	1743	765446	1 - 403	15 - 417	
HDPJN68	1744	752907	1 - 314	15 - 328	T34282, T18874, AA983199, AI491817, AA579179, AA630672, AA010299, AI818231, F05641, AA425118, R12156, H15474, AI207363, AA513893, AL041373, AL041526, AL041527, F13380, AA410788, AA584170, AW022608, AI733856, AI056177, AA506744, AC005411, AC002431, AC00516, AC006552, AC006390, AL031432, AC004983, AL031283, AC005046, AC005953, AP000348, AB000931, AL035420, AL049830, AC006501, AC005756, AL031279, AB009667, Z83845, AL022237, AC004841, AC006312, AC003800, AC004812, AC002550, AC006313, Z69706, AC004534, AL078638, AL117694, AL022316, AC005071, AC002549, AC002070, AC006012, AC005305, AC012384, Z83856, AC003029, AL031466, AC007842, AF088219, AC012627, AC004675, Z84469, AC005759, AC006117, AC006480, AC002996, Z84483, AL031680, AC005837, AL133396, AL122020, AC005412, AC006120, AC005703, AC008975, AC004983, AC003080, AC005070, AL137191, AB023049, AL031591, AC006371, AL023913, AC002525, AF114156, AC005520, AP000281, AC004552, and AC007435.
HDPJO40	1745	711003	1 - 359	15 - 373	AA578690, and T05118.
HDPJP32	1746	918630	1 - 476	15 - 490	AF104015.
HDPJP79	1747	538038	1 - 465	15 - 479	AI110883, and AC002476.
HDPJR11	1748	965011	1 - 329	15 - 343	AW204366, AA865368, AA442937, AA436769, and AW197446.
HDPJU86	1749	785391	1 - 743	15 - 757	AI703393, AI656220, AI457528, AI214558, W15512, AA888880, W39617, AA995374, N56658, AI202894, N47548, AI916559, H06953, R54815, R45929, R45928, T27096, AI203071, AA782845, Z41377, F04514, N30325, and N47547.
HDPKD52	1750	959653	1 - 1159	15 - 1173	T20100, and AC003070.
HDPKD82	1751	778970	1 - 374	15 - 388	
HDPKQ40	1752	710991	1 - 355	15 - 369	
HDPKZ25	1753	677921	1 - 551	15 - 565	AL031608.
HDPKLB25	1754	965139	1 - 430	15 - 444	H47933, N99775, AW391235, and R58738.
HDPKLC45	1755	909091	1 - 816	15 - 830	AI445866, AI816830, AA639828, R41845, AA258158, Z41214, H06057, F02752, T11904, and AL050333.
HDPKLC60	1756	740144	1 - 382	15 - 396	
HDPKLD11	1757	966610	1 - 430	15 - 444	AL120898.
HDPKLD29	1758	690409	1 - 431	15 - 445	
HDPKLD57	1759	734528	1 - 412	15 - 426	



HDPLD89	1760	786704	1 - 421	15 - 435	R58132
HDPLE38	1761	706639	1 - 345	15 - 359	AA642326, AI267274, AI183572, and AB020719
HDPLE63	1762	703477	1 - 433	15 - 447	
HDPLE75	1763	852685	1 - 447	15 - 461	
HDPLE88	1764	625293	1 - 323	15 - 337	
HDPLE96	1765	915966	1 - 437	15 - 451	
HDPLE86	1766	785316	1 - 619	15 - 633	AA181731, AI343501, AI137607, AF109219, AB030280, AB030279, AB030316, and AB030312
HDPLG10	1767	964213	1 - 402	15 - 416	HA3885
HDPLJ28	1768	840111	1 - 145	15 - 159	AW085622, AW135279, AA779541, AI627872, N51608, AA382892, AI272986, AA416724, AI045453, AI440260, AW082088, AI249877, AI589428, AI037602, AI064666, AW029611, AW104141, AI921379, AW089351, AI289151, AI285432, AI873923, AI590043, AW075522, AI680066, AI347582, AI347701, AI273901, AI537244, AI500584, AW074763, AI866503, AI673363, AI797908, AI698391, AI273901, AI537244, AI500584, AW074763, AI866503, AI673363, AI797908, AW051088, AW193231, AI432644, AW020397, AW074172, AI345415, AI889189, AI472566, AI633125, AI538564, AI815232, AI915291, AI491710, AW152182, AA928539, AI521799, AI884318, F27788, AW006032, AW130134, AI559524, AW087455, AW080746, AI345688, AI582912, AW163554, AI522052, AI697207, AA019328, AI859991, AI610690, AI249257, AI951868, AI963625, AI241744, AA862606, AI579901, AW105383, AI499890, AI866801, AI432030, AW104827, AI096481, AI580694, AW083374, AI500714, AI690748, AI670009, AI376872, AI679796, AA279795, AA580663, AI559555, AI890533, AI633062, AW148408, AI818683, AW104724, AI612852, AI922707, AI573032, AI962858, AW167083, AI583065, AI537024, AI648367, AI570909, AI435268, AI378080, AI538885, AI269862, AI538716, AW104062, AI636309, AI679672, AI580435, AW150225, AI631095, AI538850, AI362248, AI580451, AI312542, AW191844, AI684305, AW303089, AW131139, AA641818, AI559619, AI921464, AI267185, AW170673, H89138, AI523964, AW265004, AI961393, AA693331, AI624084, AI611743, AI912356, AW081322, AI621341, AI041105, AI525260, AI047344, AI687295, AI799314, AI366900, AI540674, AI473536, AA761557, AI866469, AI504723, AI048656, AI446124, AW151847, AI803778, AI016107, AI567883, W74529, AI690312, AI688858, AI677727, AW075669, AI702073, AI800473, AI371251, AW130681, AI263312, AA420722, AI536685, AI798456, AI678446, AW075305, AW192461, AI433157, AI952493, AI811840, AI002285, AI433994, AI866465, AI540458, AI799674, AI811644, AI564719, AW082607, AI254731, AI685005, AI4918809, AI887369, W48671, AI570807, AI52274, AW083778, AI345612, AI357599, AI862139, AW193038, AW081653, AI921176, AI683173, AI345416, AW129722, AI564500, AI679800, AI581033, AI291601, AI433600, AI909697, AI802542, AI048312, AI134712, AI619502, AI609580, AI627988, AI628015, AW021717, AI567846, AI682971, AI119828, AA744557, AI591387, AW128841, AI587606, AI241923, AA768478, AW169784, AI500061, AI933992, AW085786, AI280637, AW078895,

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HDPLK49	1769	835603	1 - 275	15 - 289	A1239332, and A1000542.
HDPLN06	1770	935010	1 - 422	15 - 436	
HDPLN76	1771	921700	1 - 391	15 - 405	AA481295, AA213873, and AF001549.
HDPL050	1772	724098	1 - 714	15 - 728	AA355040.
HDPLT29	1773	958196	1 - 204	15 - 218	
HDPLV74	1774	765334	1 - 467	15 - 481	AL034375.
HDPLMA48	1775	582015	1 - 829	15 - 843	A1760818, and A1769951.
HDPLMC49	1776	852767	1 - 1468	15 - 1482	
HDPLMF53	1777	733466	1 - 384	15 - 398	R60108, A1914747, W89152, A1371165, A102980, H71659, U07562, A1002073, A1049576, Z95115, A1005832, A1009174, A1002551, A1110324, Z99291, A1002365, A1035659, A1002132, A1005015, A1004779, A1007151, A1004672, A1035405, A1007207, A1006430, A1004953, A1007011, A1111168, A1008726, A1002994, A1064860, A1006064, A1006430.

HDPMH83	1778	661316				AC004472, AL031276, M31051, and AC000394
HDPMJ93	1779	852763	1 - 567	15 - 581		AB001535, AF001064, and AF001063
HDPMO62	1780	912722	1 - 571	15 - 585		
HDPMJ25	1781	678068	1 - 570	15 - 584		
HDPMQ34	1782	956248	1 - 588	15 - 602		
			1 - 417	15 - 431		
HDPMH83	1778	661316				AA678970, AA515440, A1110760, AA682043, AA679936, AL633479, A1732120, AC005919, AC004382, AC008072, AF196969, L44140, AC005722, AC006285, AC005881, AC002474, AF109907, AC006455, AC002077, U63721, U95719, AC005243, AF000114, AF000046, U62293, AC004531, AC009516, AC002232, AC005037, AC007386, AC005057, AB022785, AC008989, U62292, AC004854, AC005225, AC005740, AC004526, AC004253, AC005776, U78027, AL013283, AC006576, AC004876, AL021155, AL049776, AC005695, AL021407, AC0020663, AL022312, Z98200, AL035422, AL139054, AF000065, AC002310, Z93023, AC004815, Z98051, AC005180, AL049760, AP000553, AL022336, AC007387, AC005920, AC005280, AC000533, U52111, AF134726, AC0005215, AC000159, AF165926, AL033527, AL049692, A1135744, AL031311, AC004477, AC005015, AC004448, AC006026, AC007637, AC002404, AC006088, AC007225, AC005565, AC006539, AC007919, AC005846, AF047825, AC004858, AC000134, AL031985, AL132987, AC005821, AC005839, AL008582, AC004067, AC004651, AC005899, AC007388, AC005562, AC007773, AC005486, AC006571, AC016025, AC004851, AC004383, A1133243, A1133245, AL035683, AF053356, AL031680, Z86061, AC004895, A1204507, AC009044, AP000555, AL035458, AC005837, AL022163, AC005071, Z93020, AL008635, AC005480, AC005552, AF152363, AC005484, AC002059, AL023553, AC005399, AC004223, AF205588, Z84487, Z98743, AC004821, AF207550, AC002115, U95742, AL031432, AC004813, AC007845, AC005682, AL096791, Z95329, AC005479, AC006251, AP000350, AL009181, AC006638, AC008372, AC002418, AL049871, AC007216, AC005500, AC006254, AL049829, A1132777, AC002565, AP000302, AC003957, AC006115, AC005189, AP000493, Z94056, AC003695, AC006120, AL022721, AL023653, AC007536, AP000503, AL049780, Z83840, AC007055, AC005907, AC005859, AC000926, AC005755, AC012627, AC005609, AL031666, AC004882, AL049636, Z95115, AC004525, AC004601, AC002492, AF196970, AC007686, and AC006532
HDPM542	1783	713759	1 - 460	15 - 474		H849948, R88291, AW014470, A1810506, R85497, C15173, AA704157, AA286825, D81736, and N93332
HDPMV53	1784	697470	1 - 535	15 - 549		F09050, AA243386, C14449, AB007944, AF109076, AP000310, AC002301, AF000116, and I77096
HDPMW22	1785	665153	1 - 452	15 - 466		AA4447328
HDPMZ01	1786	916447	1 - 635	15 - 649		AA418023, AA418556, AA253164, H11871, and F05796
HDPMN03	1787	924082	1 - 97	15 - 111		AC005913
HDPMNC6	1788	934520	1 - 720	15 - 734		AA256100, and AB023182

HDNDP35	1789	973108	1 - 453	15 - 467	
HDNPE60	1790	974827	1 - 977	15 - 991	AL138082, AW246260, AW247807, AW246149, A1878829, AW403641, R07062, AA687496, AW403272, AA687440, AA852531, A1659057, A1079775, AW005562, AF107060, AB009346, AB038365, AB038366, and U58884
HDNP003	1791	924081	1 - 512	15 - 526	AA883801, A1298498, N85346, and AA249868
HDNPJ14	1792	767447	1 - 308	15 - 322	
HDPOC44	1793	707241	1 - 660	15 - 674	AA360824
HDPOD96	1794	939770	1 - 264	15 - 278	
HDPOF25	1795	852745	1 - 484	15 - 498	AC003109, Z97055, and AC005630
HDPOI52	1796	927699	1 - 884	15 - 898	A1493647
HDPOJ93	1797	792103	1 - 378	15 - 392	
HDPOK47	1798	973097	1 - 388	15 - 402	
HDPOL60	1799	767953	1 - 170	15 - 184	A1205285, A1264338, R48389, T57897, AA191491, R61591, A1365411, AA779717, AA227325, and AF056312
HDPOL66	1800	681391	1 - 424	15 - 438	AA909852, A1718702, AA830158, AA281962, AA283111, AA579393, AA814111, AA480552, AA477445, A1791799, AA807036, AA469312, AA653189, AW451366, AA814853, A1598013, Z84489, Z84814, Z84477, and AF060863
HDPOX65	1801	674963	1 - 283	15 - 297	AF001548
HDPOY33	1802	702285	1 - 208	15 - 222	
HDPOZ51	1803	926977	1 - 417	15 - 431	A1014353, AA592982, and R17976
HDPPA66	1804	870840	1 - 518	15 - 532	T99407, and T97870
HDPPC83	1805	683656	1 - 403	15 - 417	
HDPPD59	1806	708334	1 - 223	15 - 237	
HDPPG35	1807	579315	1 - 538	15 - 552	A1767219
HDPPG86	1808	923846	1 - 328	15 - 342	
HDPPK33	1809	666510	1 - 557	15 - 571	AA528168, AA417878, N75120, AA688401, A1689902, N59545, N59559, N78301, AA426418, AL037450, AW016155, and AA610394
HDPPPL30	1810	692095	1 - 581	15 - 595	A1453210, AA578690, A1950963, T05118, A1537407, AF036405, AC004408, AC007686, AC005666, AP000065, AC004985, AC005800, AP000347, AL049836, Z99716, AC005412, AF202321, A1229041, AL035458, AF107045, AC006006, AC000025, AL110502, AL1050341, AC004491, AC005527, AC004686, AL035587, AC009247, AL031668, Z97876, AC007390, AF196969, AC008394, Z82188, Z95114, AC005789, AL078639, AC005529, AF111167, AL031295, AC010205, AL096791, AC004382, AC002300, AL132987, AC005907, AC005409, AC007731, AC006455, and AC005500
HDPPM09	1811	625281	1 - 516	15 - 530	AF041248, AF041249, and AF058759
HDPPN33	1812	958993	1 - 136	15 - 150	

HDPPN59	1813	90867	1 - 711	15 - 725	AA781406, AA304143, and A1079221.
HDPPQ88	1814	963382	1 - 629	15 - 643	AA082133.
HDPPQ88	1815	812091	1 - 543	15 - 557	AB051092, AP000555, Z98304, A1024474, A1035464, and AC004655.
HDPPQ39	1816	712993	1 - 463	15 - 477	AL022238.
HDPPU30	1817	671973	1 - 327	15 - 341	A1741964, AA361063, and AR035946.
HDPPU44	1818	951276	1 - 437	15 - 451	NZ5176, AB013139, AC004612, AF069291, and AF049895.
HDPPW36	1819	785239	1 - 392	15 - 406	AL134920, AW392670, AL119355, AW384394, U63431, AW363220, AL119443, AW372827, AL119341, AL119497, AL119319, AL119457, A1042542, AL119324, AL119335, AL119396, Z99396, U64347, AL119399, AL119484, AL119363, AL119391, U64350, U64351, U64354, U64346, AL119444, AL119483, AL037205, A1042433, A1042614, U64345, AL134524, AL119439, AL119522, AL134902, AL134527, A10429075, AL119496, A1042450, A1042965, AL119418, A1142131, A1042984, A1042544, A1042980, A1042970, A1043019, A1043029, A1043037, A1042978, A1079683, A1043011, A1043033, A1042551, A1043043, AL119464, AL119320, AL119488, A1042850, A1043039, A1043008, A1042973, A1042428, AC006238, AB026436, AR054110, AS1671, AR060234, AR066494, AR069079, and AR043113.
HDPPX43	1820	674058	1 - 299	15 - 305	AA844106.
HDPPQA91	1821	973075	1 - 799	15 - 813	AL1708005, A1001764, H780312, N67343, AA302697, A1270524, AA086150, AW157492, AA338167, AA338659, A1634691, A1678785, A1879394, AA449710, A1591375, R636531, AA358056, A1932600, AA845700, AA095637, A1053911, AF034194, A18538864, AA074342, AW302724, F17142, AA847702, AA722297, AA727938, A1921043, A1042927, A155444, A1932932, AA746726, AA287339, AA719073, A1733856, AA961035, AA077401, A1054414, AA737321, H64265, AA747009, N55515, A1798493, A083215, R88067, AA365815, H11824, AA828062, AA503587, A1817230, A1922930, AW089898, A1494417, A1737829, AA1933110, AA569786, AW069227, A1307565, AA381138, AW081303, AA630535, Z77324, H09089, H65109, AA608715, A1634187, AA568494, AA605201, F36184, A1457313, AA587991, C15060, AA837035, T35761, AA833896, AA833875, H83470, AW270784, T51005, A1026669, AW302017, T52857, A1348678, A1637473, A1002708, A1916218, AC007536, AC005771, AC005340, AC005953, A1049773, AC002072, AC006972, Z93848, AL008716, Z70280, AC103382, AC004896, AC005050, M87898, A1010770, AF092858, A116241, U51280, AF001551, AC004882, AC007999, AC007199, A1043475, A1021154, AL117352, A1031311, AC006120, AC009336, AC001228, AC006953, A1080242, A1078477, AC003086, AC005529, D63861, AC004799, A1020998, U07563, AC004584, AC009247, AP000356, AC004821, AC004098, M87926, A1023882, AC005933, AC006958, A1078584, A1023049, Z82124, Z84572, Z97181, AC006011, AC007559, AP000512, A1137430, AC004796, Z469346, A1071730.
HDPPQ21	1822	786516	1 - 347	15 - 361	
HDPPQ83	1823	830539	1 - 465	15 - 479	
HDPPQ45	1824	928430	1 - 309	15 - 323	

AC004400, AC004476, AL050311, AC005200, AC004149, AC006262, AL008729, AL035460, AC005399, AP000350, AC003013, AC007842, AL021395, AC004019, AL137578, AC003965, U82694, AC004783, AC004706, AC002377, AL010205, AC005829, AC005409, AC008080, AC006305, AC000067, AL035086, AP000017, AC002351, AP000555, Z69925, AP002081, U72788, AP000322, AC005625, AC005796, AC005885, AP000089, AP000142, AP000543, AP000121, AP000167, AC006597, AC002468, AC002426, AC008163, Z83876, AL035415, AL035088, AC006454, AC002456, AC005234, AL109628, AC006952, AF053356, AL050317, D87675, AC005578, AC007191, AL118507, AC005370, AC005841, AP000152, AP000010, AC005049, AL049537, AP000469, AC005921, AF165124, AC007298, 134294, Z97054, AC005800, AL049843, AC002312, AC007688, AL035681, AL109952, AL031296, U07561, AC002133, AC004517, AC005379, AC003963, AL031273, AC004834, U04055, AL035412, AC005193, AL031276, Z83822, AL031588, AL034424, AL133245, AL121653, AL049696, AC005138, AL079342, AL033397, AC004887, AC007917, AC006241, AC005037, AC006312, AC005695, AL022165, M87915, AC007193, U75931, Z81364, AC006071, AP000513, AL031315, AC005914, AC007666, AC005919, AC002299, AC007435, AC007207, AL139054, AC002465, AL110505, Z68282, AP000692, AC004510, AC004644, AC005624, AC004791, AC009363, AC002369, Z85987, AL109627, AL031846, AC007314, Z98755, AC005837, AC008123, AL133448, AC005089, AC007363, AC006211, U66061, AL050331, AL096775, AC006088, AP000159, AC003112, AP000558, U82670, AP000261, Z99715, AC005903, AF024539, AC006130, AC005365, AC002316, Z98048, AF031078, AP000035, AP000100, Z81369, AF124523, AL035588, AL034420, AF227510, AC005273, AC004825, Z99943, AL080317, AL079295, AC004057, AL021407, AC005088, AL121754, AC006538, AL022323, AC008124, AC005871, and AC004025.					
HDPL15	1825	789876	1 - 415	15 - 429	
HDPL64	1826	746043	1 - 394	15 - 408	
HDPL72	1827	760934	1 - 382	15 - 396	W73902.
HDPLQ3	1828	923168	1 - 437	15 - 451	
HDPLQ40	1829	949723	1 - 1727	15 - 1741	
HDPLQ77	1830	739816	1 - 363	15 - 377	
HDPLQ31	1831	741278	1 - 422	15 - 436	AC003695.
HDPLQ30	1832	768771	1 - 464	15 - 478	
HDPLQV63	1833	744471	1 - 307	15 - 321	H09185, F12161, T75262, and T65253.
HDPLRE08	1834	958933	1 - 661	15 - 675	H00911, H84847, and AP000404.
HDPLRE10	1835	961306	1 - 400	15 - 414	AC005105.
HDPLRG09	1836	828572	1 - 366	15 - 380	AL653128, AA608839, A1082182, AA294981, AW451945, AA361764, AL610135, AW402400,

HDPRH02	1837	919404	1 - 777	15 - 791	AA926743, AA759066, AA287428, AL039683, and AB033038. AL1348070, AL1371167, AL1378134, AL1553832, AL1816769, AA804474, AL101522, AA887492, AL084865, AA741486, AL196192, AA913644, AL021892, AP042465, AW007026, AA279724, AL381670, AL292178, AA279692, AL291674, AW291184, AW298288, AW452501, AL224078, AL301454, AA913182, and AL1378100.
HDPRH59	1838	739077	1 - 604	15 - 618	AA213441, and AF017714.
HDPRJ19	1839	773790	1 - 392	15 - 406	R45733.
HDPRJ58	1840	724652	15 - 384	15 - 384	AC'005803.
HDPRN15	1841	577985	1 - 439	15 - 453	
HDPRP29	1842	690399	1 - 606	15 - 620	AL174237, and AA019204.
HDPRP63	1843	771394	1 - 452	15 - 466	AC'006213.
HDPRS79	1844	774077	1 - 288	15 - 302	AW236973, and AL1521731.
HDPRY05	1845	958822	1 - 455	15 - 469	
HDPRY33	1846	893790	1 - 555	15 - 569	AP984149, T83298, T90781, AL598260, R94426, T80416, and Z97352.
HDPRY70	1847	677782	1 - 330	15 - 344	AW027929, AL672172, AW027716, AL1313156, AL831852, AL738441, AL161795, AP909010, AL824006, AP961202, AL506917, AL1394023, AW241527, AL693976, AP985370, AL1384116, AL1333382, AL768254, AL366852, AL337214, AL264540, and AC'004917.
HDPS055	1848	731496	1 - 308	15 - 322	AL815715, and AB028996.
HDPSG10	1849	961323	1 - 443	15 - 457	AA310474, and AL831536.
HDPSJ84	1850	782867	1 - 409	15 - 423	RI6664, T82134, and AL031133.
HDPSM07	1851	620372	1 - 587	15 - 601	NS9251, AA504245, AL679277, AL922887, AL161077, AL767882, AW337496, AW138439, and AL679851.
HDPSO36	1852	959141	1 - 418	15 - 432	AL521731, and AW236973.
HDPS557	1853	734507	1 - 563	15 - 577	AW264023, AL193596, AL276007, AL828424, AL342582, AL291713, AL140006, AL858631, AL500563, AL914656, H81012, AA847341, AA828840, AW339694, AL570067, AL873661, AA593168, AW238423, AW085626, R79396, R91350, AW24516, AW059706, AA947352, AA364082, AW028376, AL281022, AA632355, H85358, AA640563, AL760575, AL446618, R00693, AA364147, AP04126, AA991640, AW022796, AA515727, AL282322, AA420531, AA657834, AL003620, AL572680, AA493814, AL268465, AL814863, AA3359194, F34164, AA310753, AW166996, AL500315, H57802, AA419014, AA502862, AL031427, AC'003029, AF111168, AC'006079, AC'004996, AL021546, AC'005520, AC'004237, AL021937, AL050318, AC'005914, AC'007314, AL021331, AC'008372, AL133245, AL121653, AC'002351, U07000, AL079304, AP000503, AC'002425, AC'005581, AF134726, AC'006160, AL031255, AL049872, Z97056, AC'004081, AC'005911, AL034420, AL034371, AL050338, AC'0004126, AL035422, AC'002094, AF195658, AC'006285, AC'005585, AL121658, AL133448, AL022165, AC'007066, AC'004801, AC'005800, AC'004099, AL031121, AC'004893, AD000864, AF038458.

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HDPSU54	1854	670838	1 - 347	15 - 361	
HDPSV04	1855	614924	1 - 410	15 - 424	
HDPSV29	1856	690415	1 - 423	15 - 437	
HDPSV30	1857	691778	1 - 342	15 - 356	
HDPTC31	1858	878639	1 - 355	15 - 369	
HDPTJ25	1859	706448	1 - 365	15 - 379	
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HDPTJ79	1860	669209	I - 1017	I5 - 1031	

HDPT071	1861	760142	1 - 662	15 - 676	AW13149, AL048534, AF783898, AA504896, AA668340, F17149, A1700109, AW271711, AA468022, A1309643, A1110595, AC008122, AB023048, AC002350, AC005837, AB001523, AF053356, AC005874, AF134471, AF111168, AL035450, AC007227, AC006677, AC005242, AC005197, AC002369, AL034423, AC005529, AC003553, Z82206, U66059, AP000356, AC005363, AC004643, AC004149, AC002558, Z81314, AL049748, AC005409, AC002312, AC007382, AC007955, AC020663, U91327, AL096791, AP000689, A125235, Z98257, AC004447, AC006011, AP000557, AC005747, Z84476, AC007934, AF031078, Z91928, AC00285, AC004598, AF030876, AC007787, AP000141, AC005952, AC006039, AL133448, AL109627, Z93017, AC006966, AP000088, U73479, AC005695, AL096710, AP000036, AC006480, AC005411, AC006029, AL049832, AC005399, AC007536, D87675, AP000688, AC005570, L78833, AL031255, AL031286, AC009516, AC000025, U73636, AC000081, AL080243, AC005696, AC005257, AC007387, AC002378, AC006544, AL049776, AL049845, AC005512, AC005913, AC007226, AC005081, AP000692, AC006512, AC007022, AL096775, AL031602, AF064861, AC007919, AC003982, AC007845, AP000355, X69907, AC005015, AL008712, AC002059, AC006137, AC007051, AC006071, AL022163, AC004634, AC007040, and Z98752.
HDPT07	1862	741632	1 - 355	15 - 369	AL070725.
HDPT095	1863	906940	1 - 489	15 - 503	AW298312, AW298314, and AB033497.
HDPTT20	1864	669029	1 - 316	15 - 330	Z84488.
HDPTU30	1865	691181	1 - 343	15 - 357	AL049795.
HDPTU66	1866	697690	1 - 374	15 - 386	
HDPTU95	1867	876582	1 - 312	15 - 328	
HDPTW90	1868	722699	1 - 565	15 - 579	
HDPTD28	1869	852687	1 - 252	15 - 266	AI417133.
HDPUF77	1870	769852	1 - 246	15 - 260	
HDPUF04	1871	861520	1 - 438	15 - 452	H82937, AA418494, AA418396, AL064869, AW051301, T84203, F18098, AA846353, AA762726, T11545, H58588, T82034, AL609370, AA594971, U80017, AC002527, AC002302, AC004799, AC003010, AC004821, AC005011, AC005225, AL023755, AP000962, AC005071, Z80902, AP000502, AC002326, AF134776, AC005329, AC005031, AL133355, AC004922, AC004491, AC004839, AC004143, AC004976, AC004125, AC005564, AC002132, AC007151, AC002549, AL034419, AL009031, AC005763, AF024533, AC008015, AC005899, AL035685, AB026906, AC005162, AC006014, AC007546, AC006251, AC002312, AC002112, AC005015, AC007225, AL023807, AC003048, AC004878, Z97200, AC005488, and AC005764.
HDPUG06	1872	968313	1 - 459	15 - 473	AC002091, and AC003695.
HDPUQ02	1873	973235	1 - 683	15 - 697	AC006238.
HDPU62	1874	604483	1 - 365	15 - 379	AL500481, F06397, AW148768, AL681168, N36045, A1133235, AA491120, R18846, T90676,

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HDPV09	1875	774165	1 - 723	15 - 737	
HDPVE36	1876	706712	1 - 546	15 - 560	AA256770
HDPVGH1	1877	966556	1 - 910	15 - 924	AW068637, AL003761, AL039369, AL380538, and AL137555.
HDPVH13	1878	656711	1 - 581	15 - 595	W26587.
HDPV/L94	1879	927023	1 - 463	15 - 477	Z81450, and AC004652.
HDPVQ96	1880	796133	1 - 389	15 - 403	AA777374.
HDPVR71	1881	740340	1 - 850	15 - 864	AA082562, and AC007899.
HDPVU35	1882	852616	1 - 623	15 - 637	AB002344.
HDPVV46	1883	718160	1 - 399	15 - 413	
HDPVV95	1884	582503	1 - 351	15 - 365	
HDPVW13	1885	656715	1 - 585	15 - 599	AC006207.
HDPVY53	1886	727593	1 - 317	15 - 331	AA948370, AC005390, and AB023180.
HDPVY58	1887	710458	1 - 365	15 - 379	AL038081.
HDPWA55	1888	965474	1 - 408	15 - 422	AC006966.
HDPWD25	1889	677764	1 - 500	15 - 514	
HDPWE80	1890	909916	1 - 932	15 - 946	AA172104, AA232124, AL986306, R58806, AA081848, and AA232093.
HDPWE88	1891	857980	1 - 427	15 - 441	R18560, R13864, Z41866, AA333327, AA016124, AF107834, AF119386, AF097723, AF009513, and AF107835.
					AF1758788.
HDPWH10	1892	967692	1 - 472	15 - 486	AA714632, D45305, AA307780, and AL923248.
HDPWN34	1893	703814	1 - 451	15 - 465	AA120101, AW246324, AF034175, AH60387, AW401572, AA338094, AA348155, AA316673,
HDPWY46	1894	915964	1 - 462	15 - 476	AA337791, R59433, U46268/AW402296, AA955027, AA393071, AF061738, AC006160, and

HDPXE68	1895	852626	1 - 635	15 - 649	S65367
HDPXE52	1896	726450	1 - 440	15 - 454	AF004231.
HDPXL59	1897	615543	1 - 568	15 - 582	AI115345, N51515, AW297689, AA115304, N51527, A1925591, and A1080209.
HDPXL68	1898	707532	1 - 830	15 - 844	AA789296, and A1420081.
HDPXP04	1899	614895	1 - 745	15 - 759	T62674.
HDPXU29	1900	852638	1 - 519	15 - 533	H72530, AL207465, W52505, A1311647, A1174017, N72717, AA007673, N68472, AA773302, AA174016, AA223762, A1371165, N71291, A1457389, A121782, A1008718, AC005833, AC004531, AC002369, AC005759, A1049757, AP000533, X77737, Y12851, X77738, L35930, AL031672, AC009336, A109907, AP000553, AC007022, AF157814, AC004813, AC010205, AC005066, AL034552, AF001552, AC002395, AC005291, AC005789, AC000159, Z98941, L78833, AC003102, AC004828, AC006236, AC000093, AC007243, AF053356, Z24938, AC002375, AC006121, AC004828, AC006236, AC000093, AC005305, AC001231, AC006001, AC002086, AL008712, AC005695, AL050321, AL049544, AL035420, AC000105, AC006543, AC005664, AL022336, AC005911, AF111168, AC004805, AC006547, AC007533, AB014084, AC004659, AC006544, Z95118, AC004032, AL132992, AC004752, U07000, AL117258, AC001680, Z98742, AC004966, AF006487, AP000501, and AC003983.
HDPXW75	1901	951320	1 - 771	15 - 785	N46466, A1337376, W86648, AA52544, A1279721, A1341807, A1651516, A1245138, A1262580, and W86523.
HDPXX01	1902	915914	1 - 392	15 - 406	AA831180, AA593812, A1608672, AA877902, AA845911, A136605, AA831016, A139428, A1920936, A1421209, A1138419, A1138420, W70159, AA034272, A1413351, W96568.
HDPXZ92	1903	743429	1 - 673	15 - 687	A1870975, A1129781, A1749544, AA029334, W96468, A1801387, A1245505, W87792, A1342176, A136136, A1310128, A1343371, AA029335, A1138779, A1217508, A1337280, A1832175, A1018551, A195185, AW080907, A1009317, AA033560, AA339417, A1245250, AA523730, A1658874, A138805, W70198, A1340796, AA781337, T89101, AA032082, AA746107, A1659538, A1989852, W87672, A1698899, R46554, R46555, AA340560, A1490481, A1890907, A1623302, A1431307, A1561147, A1866786, A1431316, A141238, A1043278, A1815239, A1500659, A1134524, A193598, A1866465, A1815232, A1801325, A1866691, A1500523, A1804505, A1538850, A187775, A1582932, A1434223, A1872423, A1590043, A1284517, A1923989, A1500706, A1491776, A1445237, A1289791, A1926593, A1511138, R50170, A1521560, A1889189, A1500662, A15151974, A1285417, A172723, A1284509, A1539800, A1582912, A1889168, A1538885, A1440263, A1927233, A1058275, A1866573, A133493, A1434256, A1866469, A1805769, A1434242, A1888661, A1500714, A1284513, A188818, A1285439, A1890472, A1436429, A1859991, A1623736, A1355779, A1889147, A1581033, A1371228, A1491710, A1440252, A1440238, A1924051, A1567971, A1610557, A1860003,

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					AW179153, AW179151, AW179152, AW179089, AW179088, and A122043.
					AB011158, and Z61808.
					T87457, T99432, W88845, R06479, and AA226858.
					AW021230, T97381, D87685, and AF091622.
					A1119443, AW392670, A1119363, AW372827, A1119319, U463436, AW363220, AW384394, U46351, A1119497, U46349, A1119496, A1119457, A1119355, U46350, A1119484, A1119391, A1119444, U46347, A1134528, A1119324, U46341, Z99396, A1134518, A1042970, A1119355, A1119483, A1119341, A1119439, U46345, A1134524, A1042965, A1119522, A1042614, A1042995, A1119399, A1037205, A1119396, A1134538, A1119418, A1119304, A1043029, A1042450, A1042975, A1042850, A1119120, A1042544, A1042542, A1043019, A1042984, A1119464, A1042551, A1043003, A1026436, A181671, AR054110, AR060234, AR060494, and AR060979.
					N75118, A1022157, and Z82211.

HDQEF89	1915	786393	1 - 531	15 - 545	
HDQEF75	1916	766698	1 - 392	15 - 406	
HDQEN22	1917	931041	1 - 508	15 - 522	
HDQES62	1918	792766	1 - 661	15 - 675	
HDQET03	1919	923015	1 - 478	15 - 492	AW269444, AA669114, AW082136, AI914499, and AC000198 AL119391, AA833896, AA833875, AA457070, AI040411, AA721645, AA828739, AA829154, AI017251, AI811653, AA655005, AA834885, AI887716, AW089898, R08918, AA584125, AC004066, AC005209, AC006960, AC004707, AC007664, AC007327, AC007225, AC005828, Z85986, AP000503, AC005375, AF134726, AC008018, AC005944, AC003991, Z95115, AL033527, AI133163, AC006938, AC004993, Z82178, AL035405, AC005011, AC004106, D28126, Z49155, U07561, AC005954, AF002997, U95739, Z81364, Z85987, AL031282, AL008721, AL031673, AC004590, AC006316, AC007388, AC004832, AC007876, AC005516, AC000111, AD000813, AC005763, AC002316, AL023799, AL022312, AL049795, AL034549, AL022165, AC005688, AC006430, AL031643, AC006128, AC004542, AC004552, AL136297, AC005562, AC005783, AL009183, AP000252, AP000030, AP000212, AP000134, AC005996, Z82205, AC007283, AL031281, AC005484, AC006011, AC006328, AC005037, L78833, AC007533, AC006050, U62293, AL050307, AC007540, AC006312, AC007114, and AP000690
HDQET24	1920	805486	1 - 642	15 - 656	AW450053, FI1194, and U91321
HDQEU26	1921	950940	1 - 503	15 - 517	
HDQEU63	1922	852614	1 - 524	15 - 538	D25538, and Z49806
HDQEU02	1923	973212	1 - 743	15 - 757	AI142131
HDQFA01	1924	924539	1 - 1363	15 - 1377	AW297731, AI885498, AA809854, AI831297, AA687107, AA809960, and AI52034
HDQFC85	1925	783797	1 - 1331	15 - 1345	
HDQFK04	1926	926758	1 - 673	15 - 687	
HDQFT11	1927	966106	1 - 319	15 - 333	
HDQFW03	1928	915968	1 - 542	15 - 556	AA476647, U25898, and AC005182
HDQGB04	1929	852577	1 - 500	15 - 514	D79099
HDQGC76	1930	950734	1 - 486	15 - 500	AL119319, AL042551, AW392670, AL119457, U46346, Z99396, AL119363, AL119341, AL119497, AW372827, AL119443, AW363220, AW384394, AL119484, AL119391, U46351, AL119324, U46350, U46347, U46349, AL119355, AL119496, AL119444, AL119483, AL134518, U46341, AL119335, AL134538, AL042965, AL134902, AL142132, AL119439, AL119418, AL119399, AL037205, AL119401, AL119522, U46345, AL119396, AL042450, AL042614, AL134525, AL134536, AL042970, AL119320, AL134532, AL042975, AL042544, AL043029, AL043019, AL042984, AL042542, AL119464, AL043003, AB026436, AR054110, AR066494, A81671, AR060234, and AR069079
HDQGG01	1931	974439	1 - 201	15 - 215	
HDQGR63	1932	875920	1 - 633	15 - 647	AC007395

HDQGR80	1933	791744	1 - 429	15 - 443	R64617, H86221, AA541532, AA630122, AA312303, AA659360, T47389, AA070927, AL037777, AW188742, AA601237, H84412, AB873759, AA302661, AA019003, AA669711, F35097, AA654874, T71936, AL160786, R72363, AL139054, AC002312, AC005231, AC000379, ZS3844, AL031666, AC009509, AC004103, AL022323, AB003151, AC005695, AL022326, AL021977, AC007199, AL109657, AC005071, AC000353, AC005519, AC006241, AC006449, AC004878, AP000500, AC004134, AC004922, AC004821, AF042089, AC006023, U91321, AC004081, AL034417, AP000688, AF205588, Z93023, AL109952, AL035420, AL117337, AL035400, AP000509, AC006251, AL133163, AL024498, AL034549, AC004814, AC005815, AC004386, AC004491, AC002039, AL008718, AC007551, AL022165, AC005763, AL049780, AC004955, AC002128, AL078581, AF001549, AC004257, AC005081, AC005207, AL022316, AP000210, AP000132, AC004659, AC002418, AC006538, AC005620, AL135744, AL122023, L34294, AC007011, AL050317, AC005038, U85195, AC004910, AC005046, AC004851, AC005089, AL049576, AP000248, AC006006, AC004217, AC004139, AC002395, AC006014, AC005088, AL022327, AL035527, U07000, AE000658, AF196969, Z85987, AC005531, AC003043, AC005225, AL096701, AB015355, Z97054, AL031311, AF111168, AL109628, AC009501, AF001550, AC002126, AC007919, AC005944, AC002369, AC003029, AC002115, Z95116, AL079340, AC004865, AC006047, AC005015, AC005932, AF111169, AC005488, AC003966, Z98051, AC004067, AC005399, AL049694, AL031662, AC005332, AL109865, AC000075, AL109758, Z95114, AC007381, AC007899, AL035684, AL035072, AC006547, AL096791, AD001527, AC004770, AC002073, AC006312, AC004583, AC004996, Z86090, AL01595, AL080243, AC004099, AC003080, AL049776, AC006211, AL049795, AL133246, AC002375, AC007151, AB023049, AC006468, AL050318, AC004815, AC002310, AC002425, AP000345, Z68872, AL022318, AC005049, AC006011, AL035455, AC003042, AC010077, AC004805, AC007308, AL021528, AC007421, AC012039, AC005383, AP000512, AL022336, AC005484, AC006450, AL078593, AC002476, AL022337, AL031291, AC006048, AL109827, AL031432, AL034429, AL03147, AL251973, U91326, AL020995, AC004560, AL121655, AC000120, AC005800, AC005387, AL022237, AC010206, D84394, AC005295, AC005813, AC005632, AC006536, AP000555, AC002072, AC005856, AC002301, AC006948, AL133245, AC009247, AC005261, AL031281, AC002036, AC006077, AC006254, AC007993, AC004694, AF030453, AC004884, and AP000689.
HDQGR80	1935	880654	1 - 509	15 - 523	
HDQGT70	1936	909848	1 - 436	15 - 450	AA809589, and AA532423.
HDQHF10	1937	963485	1 - 395	15 - 409	
HDQHK04	1938	926988	1 - 949	15 - 963	AA847392, H45758, AA021644, and AA010967.
HDQHM43	1939	852556	1 - 559	15 - 573	
HDQHO04	1940	926976	1 - 212	15 - 226	

HDOHQ07	1941	852555	1 - 421	15 - 435	AC005390
HDOHQ08	1942	811790	1 - 502	15 - 516	AA428432, AF033033, AC008372, and Z81304
HDOHQ08	1943	973129	1 - 493	15 - 507	AA04340, AA57782, AW022897, AA601125, W23726, AA161492, AI250561, AW166697, AI345007, AI345797, AA593465, AA226084, AW023662, AA577906, AA484749, AI133448, UA7924, AC006965, AI17352, AI024507, AC005527, AC004584, AC004491, AI109627, AC005049, AC005529, AC006211, AP000356, AC004167, Z85986, AC007242, AC006203, AC004895, AC005952, AC002565, AC005089, AC006536, AC004656, AC005335, AC006251, AP001054, AI121658, AC006538, AI049776, Y18000, AI022237, AC007055, AF030453, AP000558, AP000354, AC002369, AC005495, AF053356, AC004097, AC003109, AI133163, AC005220, AC005747, AC006312, AC007308, AC006012, AF001552, AC004000, AC005391, AC003664, AC002301, AC005015, AC004841, AC007226, AC003983, AL033131, AC002430, AR036572, U91328, AL031291, L44140, AP000008, AP000511, AC004963, AL035420, AC007384, Z93023, AP000704, AC006407, AC006449, AC006238, AC002551, AF111169, AC004149, AC004408, AL021154, AL020997, AC006509, AC009542, AL049709, AC006088, AL035460, AC005500, AC005940, AC005332, AC004967, AC004217, Z98304, AC003098, AC007201, AC005088, AC004522, AC006050, AB017602, AC004671, AC004882, AC006270, U91326, AP000114, AC005726, AC002464, AC006946, AL031276, AL079303, AC005548, AL049636, AC002544, AC005225, AC002094, AC005180, AL008718, AC006130, AP000269, AC005920, AC005102, AC007324, AL109984, AC006241, AC005067, Z95114, AP001052, AC005277, AC003665, AI133485, Z84487, AL031432, AC005841, AF217403, AC004084, AC006057, AL035072, AC006480, AC005081, U80017, AC002472, AC002425, AP000103, AC004520, AC005581, AC007225, Z97055, AC007686, AC007664, AP000332, AC003071, AC007878, AC004983, AC005822, AC003353, AC004834, AC010205, AL050325, AC004020, Z84466, AC004143, AC005409, and AL031281.
HDOHT10	1944	963481	1 - 481	15 - 495	W31096, and AC005783.
HDOHZ10	1945	961336	1 - 474	15 - 488	AA179004.
HDOHQZ22	1946	879416	1 - 396	15 - 410	
HDOQH19	1947	974391	1 - 504	15 - 518	AA557945, F16848, AA984829, H68343, AA307623, AA659832, AA368329, HI15241, AA434078, AA569206, AA558404, T47138, F34151, H54252, H53284, AI249519, AA664963, AA610255, AA557790, AA778580, AI732911, W45215, AW265279, F34157, AA470490, AI567391, AA662614, AA368012, AI134332, F31867, AA845333, AA776225, AI671077, AA831919, AA371410, AL004523, T03928, N23504, AI345497, AI049630, AW237905, F24745, H86599, AI114494, AI806042, H43183, AI198718, AI190648, AA078483, D51877, AA846923, AW381821, H52397, H85808, AA846482, AW236277, AI619933, AI828721, AA778962, AA102737, AI800343, AI859744, AA911515, AI065031, AI337612, AA366601, AA225627, AW419389, AW265614, AA610433, AW265276, H58393, AW381823, AI284543, AI054090, AL079734, AA468458, AI929298, AI358928, AA568314, AI929825, AA706229, AA084032.



AA715075, AA584810, AA613875, AW2138321, AA641090, AL117258, AL049697, AC002312, AL031133, AC012085, AC007030, AC005914, AC002476, AC005081, AC005015, AF107885, AC003973, AC008372, AC005519, AC004079, AC002492, AL031123, AC006360, Z85996, AP000140, Z68276, AC004841, AL049776, AP000350, AC004383, U95739, AC005697, AC005412, AL121652, AC005736, AC006511, AP000088, AC004882, AC005323, AL109628, AL049844, AP000270, AB007869, Z99716, AC005086, AF064019, AP000563, AC008712, AF053356, AL033525, AF196779, AC007450, Z82206, AC004702, U95743, AL031311, AP000133, AP000211, AC006691, AC005082, AL050348, AL009181, Z86490, AC005349, AL133500, AC0007216, AC006959, AC004020, AL031295, Z98044, AC005332, AC002107, AP000089, AP000141, AC004132, U47924, AL021546, AC004007, AC004953, AC005193, AC006011, AC005520, AC006509, AC004967, AL021391, AC005243, AL031666, AL049778, AC002483, AC006571, AP000032, AC002477, AC009399, AC006449, AF196969, AC006130, AC004253, AC006115, AC005544, Z80232, AC005529, AC004890, AC005566, AC004655, AC004866, AC005157, AC009516, AL121655, AC006064, AC004834, AL133448, Z84467, AL022476, Z98885, AC007637, AL049879, AL034555, AC005531, AP000303, AC000159, AC007151, AL031282, AC007993, AL035410, AC005189, AB022785, AC004938, AP000036, AP000514, AL031291, Z98036, AC005971, AL135744, AL021154, AC004883, AC005913, AL133246, AC002310, AC007199, AL035420, AC005207, AP001052, Z98742, AC005363, AC004985, AC006238, AC002400, AL031432, AL008629, AC006960, AL021977, AC005803, Z82182, AC005067, AP000547, AL109952, AC005682, AL049780, AC007298, AC005696, AC009542, AC002546, AC004033, D87675, AP000553, AL132992, AC005527, AF045555, AC005479, AC010170, Z75407, AL031284, AL031846, AC005952, AL031186, AF043945, AC004142, AP000509, AC004765, AL031728, AC004104, AC002398, AL008635, AP000047, AC002073, AF109907, AL022336, U95741, AC005562, AL049779, AL133371, AC004966, AC005274, AC002094, AL008630, AL031447, AC004185, AL109758, AC004531, AC006121, AC007182, AC005785, AC005753, AL049869, Z99128, AC007056, AC003688, Z83823, L78810, AP000046, AP000114, AC002563, AL008731, AL121825, AC006057, AL109963, AC004554, AC000025, AC005318, AC005878, AL050307, AC006222, AL024509, U91321, AC005080, AL101070, Z97056, Z98752, AL049757, AC004491, AL023553, AC004851, U50871, AL1246003, Z97183, AP000704, AP000130, AP000208, AP000503, AL121748, AC008044, AC002195, S42653, L34294, AC006044, AC005551, AC006088, AP000115, AC007371, AL035458, AC005829, AL109798, and AP000247.				
AA569060.	15 - 536			
AA250925, AL610805, AW022188, AL276031, AW204488, AA978318, AA769333, AW340955, AL683013, AL135812, AA767902, H88646, AL271005, AA358212, AA405245, AA242773, AW078958, AL273047, AA491696, AL250660, AW0216945, and AL134115.	15 - 592			
HDQM11 HDQMA71	1948 1949	966021 926528	1 - 522 1 - 578	15 - 274
HDQM13	1950	924108	1 - 260	

HDCQMD14 HDCQPI83	1951 1952	783547 780731	1 - 328 1 - 687	15 - 342 15 - 701	
					A1284640, AW301350, AW303196, AW274349, A1754055, AA581903, A1110770, A1334443, A1133104, A1345518, A1708009, A0702923, A1801591, A1382655, A1281881, A0726827, A1042420, A1085719, AA483771, A1624142, A1610159, AW265009, A1679132, F36273, A1210687, A1471481, AW270270, AA164251, A1064864, AA491814, A1119691, A1139719, A1406447, A1375542, A1046898, A1821714, A1792133, A1791913, A1649642, A10338474, AA525190, AA908687, A1501552, A1821785, A1053672, AA584201, AA553468, A1801482, A1340453, A1355206, A1537955, W79504, AW439558, A1110760, AW148792, A1590958, A1623898, A1148277, A1216051, A1216035, A1431240, AA493708, AW338086, AA521323, A1731856, A1048925, A1590689, AW088616, A1871722, A1370878, AW162489, A1471572, A1632991, A5521399, A1344844, A806796, A1037554, A1674873, A4601253, F32808, Z98884, A121757, A0004941, A1212020, Z99943, A0007546, A0002429, A0002994, A0000368, A1035458, A0006254, A0002524, A1035089, A0006084, A0005244, A0007022, Z84470, A1135500, A0004386, A0004385, A1035427, A1032821, A0003071, A0003015, A190465, A0007537, Z93928, A1049552, A0003962, A0005066, A0004993, A0003015, A0007068, A109865, A1044792, A135783, A0005670, A0002377, A0293108, A0008079, A000352, A004806, A0007676, A1031885, A1035363, A12121655, A0005011, A1035460, A1031588, A0007066, A0002302, A0002430, A00036572, U91328, A0007156, A0007384, A0000049, A0004990, Z76735, A1049776, A0000311, Z98172, A0007363, A1096867, A0004895, A0007630, A0002115, A011604, A0002128, A000353, A0002531, A0004491, A0002418, A104867, A0006430, A0005618, A1031397, A1133448, A1011930, A0006079, A0004822, A118808, A000114, A0005385, A109907, A0004916, A0006037, A0006226, Z97054, A004087, A0002402, A0000552, A0006511, A0005261, U91323, A1109628, A0000555, A0005037, A0000432, A0004838, U85195, A1023494, A132994, A000658, A0004998, A0004912, A1049557, A0006128, A109967, A1003147, A121591, A0002470, A0005837, A000639, A1049795, A0007488, A0006210, A121603, A0006479, A0004987, A0004858, A0007686, A0002404, A1023882, A1035249, A0005062, A121653, A0006509, A0004866, A0005234, A0004755, A0000500, A1049712, A0002996, A0008039, A0004626, A0001549, A0000354, A0007099, A1031281, A0002385, A0007228, A1034384, A0004884, A0005189, Z98200, A0007216, A1031311, A1134726, A0005921, A0006525, A0009069, Z92545, X75335, A0005393, Z97053, A0004933, A0006251, A0003664, A121694, A1096712, A0102026, A007038, A122342, A0006211, A1035494, A0004534, A1096791, A0000557, A0006561, A121823, A0004765, Z99129, A0005242, A1021069, Z86061, A0005839, A0007298, A0005993, A0005808, A0002091, A1021453, A1004972, A0005358, A103525, L44140, A0005944, A0003627, A0002394, A0006213, A0003982, A0000085, A1031670, A0006989, A121748, A0006537, A121580, A1031668, A0004650, A1022311, A132992, A0005610, and A0005696.

HDRAB68	1953	752316	1 - 196	15 - 210	
HDTAG28	1954	765834	1 - 159	15 - 173	
HDTAQ55	1955	728772	1 - 353	15 - 367	AA 380977
HDYAY23	1956	975925	1 - 352	15 - 366	AA 504311, W45240, AA431996, F13467, F13502, and H10924
HDYB727	1957	683389	1 - 759	15 - 773	AA 234529, A1565424, A1624101, A1694224, and AC005021
HDYB145	1958	785534	1 - 431	15 - 445	
HDYB048	1959	945083	1 - 505	15 - 519	
HDYB074	1960	765555	1 - 453	15 - 467	
AA480145, AA837058, AA663306, F19258, AA713815, AA491814, AA365347, AA551509, A1205126, AA828239, AA826032, A1003172, F26719, A1886176, A1921188, AA515435, A1003743, T16592, AA095511, A054246, W0888058, A1820743, A1565245, AW088202, A1282907, W60516, AW080134, W406447, A1281903, AA340003, AA652764, A053816, A1904894, A1567674, F29989, AA482711, AW301818, AA361344, A1282832, A19393060, A1041368, A1358229, AA318652, A1307426, AA077935, AW406755, AW104748, A1365988, A147413, AW339687, AF177861, AA365144, A1138265, AW361583, A1635272, AA856981, N43757, A1963095, A1791503, A1732546, AA077817, AW071063, A1214510, A1802526, AA450199, F31204, AW071398, A1791290, AW022046, A1921649, H64777, A1679782, F35659, A1989742, A1376100, A1361335, AA292574, AA557325, AA501722, AW074059, AA252763, A1356904, A1922654, T12272, AA515128, A1564284, R72392, AA428414, AA743956, A1570138, A1536555, A1929531, AA077776, AA434484, A1284640, A1537955, A1446601, AW162049, A1251002, AA729264, A1962050, AA228420, AA515051, AA581342, A1890923, AA229785, AA658235, AW029038, A1932099, A1610159, F16273, N25303, A1917271, AA584749, AA653057, A1471481, A166815, AA745410, AA919037, AA243452, AA218645, AW074207, A1610920, A1499134, AA580662, A1138455, A1139968, A1051551, A1286356, A1188469, A1110770, F37286, AA826004, A1053672, A1345675, A139850, A1345681, A1357551, R41717, T06556, A1334443, A1865364, AW008317, AA342958, A1471729, A1048925, A1120674, A1049634, AW193265, A1816537, A1003611, W25284, AA654627, A1951863, AA364567, AA843450, AW401783, AA501784, A1079667, W302101, AA077952, AA829106, A1248679, F32395, A1119391, A1742771, AW276435, A1547286, AA443065, N71724, A1285615, AA652057, AA441788, AA649642, A1149915, AA501344, A1286264, F25203, A13438916, AW340844, A1469172, AA650244, A1493615, AW419262, A1048616, A1312149, AW440836, AW105538, AA634855, A174923, A1049722, AA602069, A1046898, N71596, A1912322, A1299050, A1079804, AA558227, AA866584, W302309, AW276827, A1807372, T19998, A1268812, A1133636, AW265294, A1926124, AA904218, AW339568, A1431966, AA559290, A1433187, N27353, A1215788, A1469878, A1040913, A1803348, T40338, AW274101, A121213, AA648110, AA366035, A1951889, A1951928, AA757474, A192740, C06327, A1368745, AA178953, A1043756, AA503258, A1368256, AA302977, A1038785, F18974, A1133164, AC002448, A1034548, A1109756, A1021578, AC004903, A1009181, AC005089, AC006312,					

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HDTBQ04	1961	869818	1 - 562	15 - 576	N69991, W47065, AW368643, AW349968, W00799, W04207, AL420674, AW027417, AA779727, AA736509, AW263261, AL090172, AA814921, AL924139, AA375842, AA375767, AA494558, AL422731, W46965, AA969233, AL142954, AL161089, AL167233, AA737756, AL681576, AA449149, AL049415, A61271, and A61272.
HDTBQ20	1962	886757	1 - 458	15 - 472	AA625147, AL044429, N95514, AL521188, M78692, AA083339, AA625350, AA916868, R46588, and AA935301.
HDTBQ34	1963	703446	1 - 453	15 - 467	

HDTBQ47	1964	720298	1 - 369	15 - 383	A1933595
HDTBQ56	1965	799840	1 - 1310	15 - 1324	<p>A1384076, N21097, A1167276, A1275519, AA495978, AW103498, AA235681, A1224882, A1565119, N31109, A1797229, AW130630, AA425033, AA490486, A1635704, A1463474, A1766927, AA616793, AA490788, AW188888, A111440, A1787383, AA236876,</p> <p>AA860394, A1659377, A1440726, A1479292, AA514684, A1499886, A1500523, A1539800, A1340519, AW082532, A1047344, AA641818, A1648699, A1915295, A1345415, AW148536, A1400011, A1625926, A1446511, A1287233, A1445256, A1952493, A1042515, AW198133, A1500061, A1451632, A1571442, A1470717, A1611738, AW055252, A1890907, A1686690, A1023871, A1453248, A1860027, A1872423, A1378123, A1678446, A1288305, A1571099, A1309300, R81679, A1500714, A128239, A1874261, AW089844, A1038715, A1966603, A1095003, A1765198, A1559619, A1683395, A1824361, AW081866, A1630928, A1540354, A1624938, A1309306, A1633125, A1434969, A1783785, A1271796, A1417790, A1859991, A1799313, A1686565, A1620864, A1538885, AW129264, AA604875, A1568293, A1433994, A1539723, A1638644, A1020381, AA503384, A1572096, A1539690, A1061405, A15345688, A1635634, F35031, A1041150, A1863382, A1923989, A1690813, A1524179, A1554301, A1917428, A1623736, A1432040, A1699020, A1440238, AW151136, AW022636, A1666465, A1570861, A1589428, AW021189, A575922, A1620056, AW163554, A1680221, N22276, A1565172, A1862043, A1950729, A1631216, A1174799, AA731184, AW075382, A1658566, A1438854, A1499335, A1623396, A1683173, A1866458, A1241741, A1648454, AW166937, A1590043, F34241, A1554283, AW083750, AW105613, AW193620, AW262491, A1439452, A1613314, A1469104, A1702019, A1537273, A1801325, A1873644, AW058341, AW151831, A1744243, A1340559, A1818562, A1312963, A1361701, A1865906, AW104641, AW088145, A1291214, A1539080, A1917331, A1582871, A1436458, A1699581, A1274655, A1036548, AW167146, A1648494, A1621341, A1524654, AA808175, A1656270, A1679550, A1671429, A1698391, A1538564, A1818240, A121564, A1915291, AW152182, A1538575, A1801064, A1582932, A1560545, A1619820, A1735654, AW021662, AW195253, A1434731, A1827058, A1120987, A1348901, A1539667, A1889189, A181102, A1521560, A1521005, A1872545, A1479577, A1079226, A1538764, A1473536, A1927233, A1539260, A1095192, AW151893, AA693444, AW196720, A1866469, AW161156, A1422855, AA502794, A1559752, A1884318, A1355779, AW238688, A1114703, A1376623, A1570056, A1815233, A1632036, A1537408, AW021717, A15666399, A1917252, W74529, A1918809, A1336586, AW080700, A1583484, A1797578, AW268306, A1579618, AW051453, A1701097, A1636507, AW090001, A1345612, A1043326, A1263331, A172487, A167464, A1739986, A117575, A1117416, A1133665, A189787, A10319, A1137530, U62966, AF013214, AF162782, Z37987, AC007043, A1050024, S68736, A1032822, L31396, L31397, A1109672, A08916, Y13350, A1133075, X66366, X00474, S61935, L04849, A1080110, A176651, E01614, E13364, A08910, AR050959, A089369, AF106862, A0938554, Y10655, D44497, A1049382, AF111851, AF118092, AF185614, AF182215, B9947, AF113694, A1117429,</p>

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			AC000456.
			AA868305, A7100890, AA789239, AI803004, AL694352, AA043382, F08474, R21498, AF121813, AF112184, and AC005354.
			AA864722, AA319763, AA248838, AA193325, AW367238, AL688661, AI921062, AW024122, and AW130404.

HD1DA45	1975	799875	1 - 697	15 - 711	T97833, T97457, and R09138
HD1DC23	1976	675331	1 - 511	15 - 525	AI471372, AA302155, AA130647, AW402145, AA599063, AI192863, AL035587, AC005164, AC005562, AB001151, AL050332, Z83840, AC005261, AC004185, AP000509, D843394, AC002477, AC007917, AF111163, AL035353, AC005089, AC005829, AC005529, AC000114, AC005512, AP00496, AC005399, AC006948, AC004076, AP000150, Z47046, AF001078, AF030876, AC004263, AP000009, Z98884, AC003498, Z98885, AF196970, AC006251, AC007228, AC005940, Z68162, AL004882, AL031650, AC004796, AL009181, AL049867, AC005520, AC007630, AL022069, AL031000, AL121655, AL117258, AL049829, AL024498, AC006137, AC003690, AP000215, AC007308, AC002470, AC006539, AC006057, AF207550, AL034429, Z82198, AC005822, AC003035, AC006538, AL008582, AL022218, AL031595, and AC006241
HD1DC53	1977	916348	1 - 220	15 - 234	AI205597, AI018716, AA952883, T66939, W86678, AA122311, AL208307, AA843726, AL090688, AW243845, AA618005, RI5055, C00676, AH76338, AA371098, AL119399, AL042382, AL079794, AL043152, AL119511, AL288285, AL119457, AL621341, AL043168, AL042544, AL041150, AL506674, AW029401, AL037582, AW168485, AL037602, AL095003, AL038529, AL037454, AL698391, T95813, AW023846, AL036705, AP950664, AW083573, AI818358, AL638644, AL042191, AP963846, AA857847, AL679214, AA908294, AW264727, AL537677, AL538055, AW152182, AP915295, AL868740, AL589428, AW103628, AL866465, AL587000, AW051088, AL758512, AL564290, AL267162, AL079740, AL500061, AL434731, AW022636, N29277, AL553645, AL781792, AL590043, AW020197, AL571551, AL557238, AL678773, AL099570, AL872433, AL119324, AW162194, AL036249, AL802542, AL241901, AL119663, AW082088, AL147292, AW163834, AL683475, AL745329, AL609760, AL559991, AW021373, AL094749, AL345415, AL623941, AL046473, AL289791, AL567971, AL446704, AL280732, AL250627, AL610446, AL559752, AL312210, AA829061, AL249877, AL046595, AL472566, AL561356, AL612913, AL043355, AL538850, AW033338, AA805434, AL620810, AW089275, AL813633, AL568114, AL539800, AL309306, AW059713, AL267185, AL75371, AL55779, AL582932, AL682798, AL860673, AL524179, AL041996, AL280607, AL679211, AW161156, AL673363, AW020419, AP29108, AL583032, AL345688, AL040449, AL634919, AL045266, AL680270, AL342023, AL590686, AL536685, AL783997, AL71429, AL866780, AL001697, AL801325, AL046066, AL884318, AL796743, AL433968, AL712884, AL860652, AW104683, AL589004, AL679506, AL99823, AW024374, AP975952, AL167680, AA503384, AL288050, AW105431, AL554998, AW129616, AW086226, AL573060, AL242246, AL566172, AL610293, AL655932, AP953767, AL567846, AL135065, AW128834, AW132071, AL524054, AA811948, AL683173, AW008166, AW024275, AL106603, AL589134, AA7366104, AL624529, AW050578, AW088899, AL669505, AL118781, AL635492, AL890391, AL923989, AL284517, AL368579, AL678599, AL912458, AL274507, AA479803, AL811840, AL864102, AP917963, AL538764, AW193872, AL824576, AW163554, AL538637, AL625701, AL366922, AL627604,

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HDTD049 HDTDG42	1978 1979	799872 713588	1 - 448 1 - 445	15 - 462 15 - 459



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HDTEG370	1980	587730	1 - 418	15 - 432	AL022396
HDTE188	1981	868565	1 - 707	15 - 721	AL040351, AL1859347, AA768342, A1864674, N80197, AA130959, A051671, AA043186, A0121548, AA087515, AA100477, AW193146, W04309, N21020, H04056, A1187288, AA944332, N21128, N47889, A952434, AA975893, AA045598, H09056, A154682, AA621534, A1859814, A18089493, A4530873, AW275917, A1025466, N02869, AA768319, AA417265, A1567303, AA828283, A1289086, AA729835, A1564973, A580315, A1052495, A119448, T40562, A1289415, A1029892, A1014387, AA917482, AW088039, AA587755, AW190165, A1371694, A018462, AW37665, A1083853, AW103201, AA868207, H81296, A1920875, A1833059, A1288157, D12288, R63140, A1942324, A1873582, A1696607, A1091426, AA127712, AW406948, D12293, A1074395, AA342276, A1955989, T91580, A1350331, AA053266, AW138496, AA342277, A1873268, AW084334, T91268, A1816957, D12294, AW351513, R83013, A1868829, A1202723, A1202414, A1908913, AA353671, T98269, A1908912, AA193223, A1866230, AA807562, C75247, A1144388, AW37656, W22908, AW381854, AW381856, A1864799, A1802279, T91628, N74141, A110801, AA788629, A1815642, AA370966, AA417302, AA894373, AA314322, A1122042, and AC007842.
HDTEP37	1982	571417	1 - 513	15 - 527	
HDTE133	1983	587773	1 - 541	15 - 555	T12054, and T12053.
HDTE119	1984	912765	1 - 399	15 - 413	A1365424, AA761247, A1270301, AA903663, AA461365, A1124751, A1493506, AA946682, A1739428, A1990438, A1312115, A1927988, A1638765, A1830148, A1719606, A1561007, A1934691, A165522, and X56389.
HDTE130	1985	915445	1 - 475	15 - 489	AL035965, and AC006501.
HDTE069	1986	650840	1 - 618	15 - 632	
HDTE550	1987	964709	1 - 423	15 - 437	AW340512, A1807894, AW082409, AW054749, and R04399.
HDTEFC55	1988	731197	1 - 560	15 - 574	
HDTEED13	1989	835596	1 - 429	15 - 443	W02422, and AA013353.
HDTEED23	1990	675407	1 - 360	15 - 374	
HDTEF53	1991	738221	1 - 108	15 - 122	T86673, AW190189, and A1193121.
HDTEF51	1992	924898	1 - 491	15 - 505	
HDTEF26	1993	681234	1 - 605	15 - 619	R80296, AW235653, A1949101, AA470449, AC002044, AC005234, X54171, AP000348, AC006230, AC007129, AC005274, and AC004230.
HDTEG59	1994	893721	1 - 213	15 - 227	
HDTEG15	1995	953336	1 - 641	15 - 655	A1765425.
HDTEG303	1996	923452	1 - 615	15 - 629	

HDTC64	1997	799860	1 - 133	15 - 147	AA489578 R69491
HDTC67	1998	682689	1 - 416	15 - 430	
HDTC67	1999	855719	1 - 562	15 - 576	
HDTC67	2000	724545	1 - 227	15 - 241	
HDTC67	2001	785047	1 - 369	15 - 383	
HDTC67	2002	726197	1 - 100	15 - 114	
HDTC67	2003	838813	1 - 345	15 - 359	AA745404, N23046, AI057391, AA001345, AC003101, AC004526, AL031670, AC0009721, AL109748, AC004256, AC004090, AP000152, AP000610, AL021155, AL022130, AC005007, AL023584, AP000346, AC005909, AC003086, AC000379, AL023553, AC006543, AC007283, and AC006011
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HDTHB41	2004	711849	1 - 475	15 - 489	AC004611, AC005551, AL096701, Z97054, AC005529, AC003101, AC005527, AC005011
HDTHB41	2005	795180	1 - 494	15 - 508	AF053356, AC004813, AC006965, AC004985, AC004167, AC002375, AC002565, AC005874
HDTHB41	2006	789790	1 - 616	15 - 630	AF134471, AP000036, Z83844, AC003684, AC005622, AL112987, AC005837, AC005102, and AL049780
HDTHM43	2007	851854	1 - 483	15 - 497	AW089395, AI053518, AL145012, AI138008, AA837739, AA664248, AA610530, AW238137, AA837796, AA993165, AW238250, AA084950, N70293, AA599749, AL047254, AA594220, T05354, AI121706, AW161966, AA001398, AI683742, AA666066, AW440424, AL223626, AA583579, AW130446, AA583568, AI568849, AI274006, AP21692, AI567831, AI445708, AA586553, D25667, AI889648, AI611487, AI336206, AA654038, AA638918, AA047045, AI572680, AI888861, AI118567, AW774119, AW021519, AA649660, F03603, AI375036, AI083707, AI246061, AA599080, AA832124, AA832152, AA6470958, H06309, H07461, AI205348, AI134332, AA324525, AI036070, AI054099, AI761566, AI114645, AI872117, AI744381, AI249853, AI284543, AI254770, AA295899, H77666, AW149972, AA564082, AI250532, AA304790, AA078088, AA295893, AA295899, H77666, AW149972, AA564082, AI347653, AA780648, AI521042, AW327555, AA167179, AI912505, AI869786, AI922583, H37892, AC002073, AL031284, AC004895, AC002347, AB020863, AL023880, AL049543, AL1137474, AP000959, AC004522, AC007387, AC005274, AC004131, AC004859, AC005519, AF061032, AF003626, AP001052, AC005664, AC008134, Z98751, AC005924, AC004837, AC000097, AL031663, AC006547, AC002351, AC000025, AC005527, AC005529, AL034555, AC004150, AC00379, AC002049, AC002054, AL117328, AL021332, AC004701, AC002472, AP000550, AC007664, AC008018, AC005358, AI133216, AI080243, AI035457, AI049569, AC006211, AL030997, AC007227, AC000083, AL031287, AL031775, AL033517, AL021878, AC004686, AP000346, AC002312, AC007695, AC004778, AC005800, AL031848, AC006210.
HDTHM43	2008	799861	1 - 163	15 - 177	

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HDTHQ15	2009	923899	1 - 599	15 - 613	AA215544, AA262119, D87446, and AF060565.
HDTHQ55	2010	799859	1 - 417	15 - 431	
HDTHW16	2011	799859	1 - 623	15 - 637	
HDTHZ46	2012	957669	1 - 362	15 - 376	
HDTHB38	2013	971665	1 - 922	15 - 936	
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					AL872294, AW207586, AW195605, AL03146, AW075561, AW068887, AA931676, AL758241, AL799473, AL031659, AL019921, AA961774, AL155364, AL190742, AW451406, AA598664, AA603695, AW057857, AL087320, AL510700, NS0786, AA717532, AA766363, R69978, AL124003, AL445187, AW102731, H04784, AL122873, R69607, AL253794, AA897328, AA598571, AL540516, D19777, AL267421, N55144, H04882, AA334830, and AL135745
					H82510
HDTHC48	2014	828038	1 - 406	15 - 420	AA0847253, AL189117, AL088925, AL801482, AL284640, AL040409, AP963720, AL042753, AA127535, AL679782, AL270171, AW406755, H71429, AL134443, AA419262, AW072587, AH431303, AL570261, AL133164, AW276827, AL368745, AA490183, AW193265, AL613280, AW302013, AL119691, AL364020, F36273, AA610491, AA043719, AW303196, AL815881, AL150211, AA523810, AW261871, AL858451, AL434695, AL538229, AA581903, AW301550, AL061143, AL567076, AW754336, AW127868, AL200168, AL143242, AL141664, AA984708, AW088846, AL538852, AA503473, AA649542, AA649484, AA491814, AL1365988, AA679481, AL138265, ALH71543, AA577906, AL061334, AW265393, AA680243, AW270270, AW274349,

AA065021, AI732120, AI042853, AA521399, AI757510, AI754658, AI138455, AW104000, AW265385, AW407578, AW270716, AA446657, AW341900, AI718446, AI571512, AI280967, AW148792, F16127, AI355206, N27584, AA846939, AW438643, AA455483, AI068846, AI379719, AA402129, AI053672, AW163293, AI117061, AI110770, AA584082, AA488746, AA611232, AA828042, AW301809, F29989, AI298710, AW023672, AA877817, AW193432, AA647222, AA587604, AW720072, AI69453, AA521323, AI35654, AA132914, AI962050, AA93219, AI619997, AA657918, AI92631, AA878409, AW300625, AI038474, AA406447, AA806796, AI471481, AI148277, AI801591, C05755, AW162489, AI655818, AA448022, AI017415, AA470969, AA084070, AI684962, AW169537, AA630362, AA526779, AI633025, AI151261, AI871722, AI246119, AI044940, AI119884, AI561255, AA515829, AA507824, AI955223, AI135801, AA525824, AA649642, C06339, AI307608, W79504, AA599920, AI126051, AA126035, AW021207, AA610493, AA846935, AI287485, HI13757, AI041690, AW265009, H72402, AA126450, AI921296, AA491284, AA682912, AI859742, AW103758, AA973803, AI610159, AI623720, AI137954, AI653886, AA613345, AA846907, AA601876, AA721056, AW089322, AW238278, AA613227, AW276817, AI076766, AA857486, AA503119, AA586458, AA623002, AI344844, AI744995, AI046205, AI921061, AA601253, AI358812, AA587256, AA679514, AA837718, AI635274, AI120687, AW073470, AC007421, AI358812, AP000134, AP000212, AC008134, AP000251, AI049776, AP000300, AC008040, D87675, AI132777, AC006948, AC007385, AC005089, AC004605, AC004263, AI132718, AC008026, AC003857, UI1309, Z49258, AC004890, AC004453, AC005037, X54175, AC006011, D83989, AI133245, AF015148, AF031078, AC008372, AC007191, AF030876, AC007216, U57009, AC005225, AF015156, AC003988, AC006116, AC002468, U18394, AC005041, AI031228, AC006111, AC004593, AI021808, AC006042, AI049539, AC005846, Z83826, U95742, AC004816, U80017, AC005372, AC004057, U18391, AC007455, AC005288, Z98051, AP009959, AC006479, AF152365, I51997, AC005335, Z82244, U67221, AI022163, AC003693, AI008715, Z99716, AI096701, AC007364, AC005015, AC005678, AI009172, U18396, AI034549, AI132712, AF131217, X54180, AF107885, AC006254, AP000568, AI031427, X54178, AI121603, AF017104, AP000126, AP000204, AC004966, U85195, AI031427, X54178, AI121603, AC008123, AC004491, X55926, AC005837, AC008045, AC005585, AI031347, AC007666, AC004859, AI035422, AI049761, AC004615, AP000142, AC006064, Z94055, AC006157, X54181, AP000537, AI031577, AC003691, AE006638, AI096703, AC007308, AI008627, AF015152, AF109947, AC001070, AI049760, AC006313, U57007, AC007617, AC005808, AI064545, AF102247, AI121934, AC007537, AC006997, AC007298, AI124523, AC005778, AI023575, AP001038, AF045555, AC005004, AC005180, AC007277, AC008039, AC005620, Z85999, AC004531, U18393, AC000118, AI121655, AP000244, U57005, AI049557, AC006965, AC006597, AC005215, AC007227, AC005324, AC005019, AI023656, AC006484, AC005632, AI049795, AC005829, AI035252, AC002377, AC005399, AC003956, AC007387, AF088219,				
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HDTID61	2016	908946	1 - 730	15 - 744	AC002544, AC005076, AC004253, AC005071, AC006441, AC005868, AF015160, AC005031, U18395, Z93016, AC006051, U191326, AC007226, AL132992, AC006040, AL132983, Z54073, AC004013, AC005104, AC004033, AL080243, AB019438, AC007731, AC003670, AC004016, AL109618, AC002432, AC008012, AL023316, AP000555, AC004948, AC004019, AC004016, AL050308, Z98745, AC005775, AC005342, AL035086, AP000211, AP000133, AL078644, AC018769, U18392, AC007878, AC005668, AC002195, AC006277, AC004040, Z98950, Z97106, AC005081, AC005527, AF015149, AL021247, AL031770, AC004502, AC005553, AF0031076, Z82901, AC005666, AL021940, AC003015, AP000504, AP000090, AC005529, Z75741, AP000350, AC003986, AC005011, AC002429, AC006480, AC005242, AL121632, Z83855, AC005684, AC006501, Z78901, AL049830, AL022328, AC002545, AC008079, X55925, AC006544, and AF077058
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HDTID61	2017	883070	1 - 515	15 - 529	AA938105, F98945, AL119762, AL041013, AL114869, AW075511, AW102811, AA806796, AA070456, AL13516, AL061646, AA767276, AA524821, T74382, AL13166, AA219225, AA224525, AA601348, AL093030, AA083046, AA502104, AA531580, AA836811, AA081825, T40308, AW151713, AA601294, AW440545, AA846568, AL046586, AW274346, AW161966, AA765736, AL138254, AA774222, AW245747, AA468456, AA377927, AW274780, T56253, N70004, R700821, AW407632, AL071603, AA806799, AL499134, R80876, AL826263, AA614180, AA634889, H46122, D82542, AA664099, AL345654, AL708009, H40936, AA483929, AW103758, AL305766, AL284640, AW168453, AL121894, AC005569, AL121603, AC002470, AC004167, AL031846, AL035420, AC005412, AC007021, AC005280, AL096774, AC003043, AC006084, AC004738, AC003664, AL031255, AC000052, AL035400, AC007731, AL049780, AC005531, AL031767, AC007055, Z83819, AC004149, AC002301, AL080243, AC004150, AC005500, AP000553, AC002072, AC009516, AL034549, AC004263, AL139054, AC004001, AC006285, AC004675, AC004859, AL049758, AC005084, AL027221, AL035587, AC004019, AC005694, AP000966, AF088219, AC007216, AL022165, AC004895, AC003108, AC006042, AP000555, U80017, AC000026, U85195, AC006241, AL031447, AC004216, Z95118, AC000904, AL031577, AC005031, AC005670, AC000087, AC004797, AC004815, U72787, AC005911, AC007057, AL022316, AC005089, AC002476, AC005666, AC005003, AL022302, AL132712, AE006658, AC002059, AC004765, AC006146, AP000133, AP000211, L44140, AL117347,

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HDTI90	2018	787413	1 - 490	15 - 504
HDTI634	2019	799851	1 - 417	15 - 431
HDTI443	2020	935643	1 - 536	15 - 550
HDTI113	2021	926052	1 - 439	15 - 453
HDTI88	2022	931122	1 - 680	15 - 694
HDTI422	2023	883109	1 - 398	15 - 412
HDTI437	2024	799867	1 - 590	15 - 604
HDTI462	2025	799835	1 - 639	15 - 653
HDTI003	2026	922928	1 - 471	15 - 485
HDTI557	2027	799838	1 - 596	15 - 610
				AA437170
				AL742572, AL109310, AL373601, AH58037, AL178168, AW243260, AW182412, AL628730, H96226, AA911198, AW237157, AA621899, AL963732, AA036662, AL099482, AA935821, and AL560638
				AL110718, and AC006121
				AA290838
				AC003992
				AL669431, AA705801, and AF112999

HDTIV24	2028	799854	1 - 391	15 - 405	AW392670, Z99396, AL119457, AL119484, AL134902, AL119391, AL119303, AW372827, AL119497, AL119443, AW363220, AW384394, AL142132, AL119319, AL119341, U463531, AL119324, U46346, U46350, U46347, U46349, AL119335, AL119355, AL119444, AL119496, AL119483, U46341, AL119439, AL119418, AL119399, AL037205, AL119522, AL119401, AL134518, U46345, AL119396, AL134538, AL042965, AL042450, AL042614, AL134525, AL134536, AL042970, AL042975, AL042984, AL042544, AL043029, AL043019, AL042542, AL042551, AL043003, AL119464, AB026436, AR054110, AR066494, AR1671, AR060234, and AR069079.
	2029 2030	799855 799853	1 - 409 1 - 641	15 - 423 15 - 655	AA281844, AL284640, AA862227, AL133164, AL281465, AL171481, AL291124, AL282832, AL291268, AL141548, AL046409, AL266133, F6273, AA340747, AL298710, AW157005, AL1341664, AL289067, AW193432, AL431303, AA491814, AL688846, AW439558, AA092126, AL358343, AA133986, AA582554, AL028510, AW276827, AW193265, AL536625, AW339568, AL061334, AL1340453, AL1761471, AW419262, AL350211, AW276435, AW166815, AA984187, AA284184, AL587583, AL587565, AP63720, AA865262, AL754658, AL613280, AL041706, AW274072, AL010159, AL079910, AL004591, AW008317, AL134443, AL156086, AW193609, AL801591, AL053672, AL158501, AA710805, AL040054, AL198376, AA649642, AU85719, AL830390, AFI50152, AA350859, AL175710, AL147135, AL937850, H79308, AL143242, AL344844, AL347927, AL653886, AA669840, AA657835, AL619997, AW166611, AL812865, AL246996, AL460050, AW188976, AL049634, AL709365, AW276817, AA977743, AL246796, AL043578, AL193007, AW131457, AL371070, AW021917, AL285696, AA347930, AW410400, AL34695, AW302013, AW406447, AL590958, AA557686, AA713815, AL1590772, AL884487, AW055226, AL589230, AL653515, AW341903, AW080858, AL676218, AL042753, AL1379719, AA593471, AA121777, AW265385, AL048925, AC005324, AC004796, AC006125, AL135744, AC009516, AC005696, AL133245, AC005332, AC003663, AL049766, AC005913, AL132777, AC004987, AC005740, AFI09907, AL022163, AC002402, AC004963, AC006597, AP000557, AD00092, AC005412, AL0036312, AC012627, AC005699, AC004534, AL008718, AC005180, AL031054, AC003353, AC007842, AL033376, AL021808, Z93930, AC010186, AC005725, AL049836, AC005598, AC003684, AC004638, AL035420, AP000558, AC004675, D00591, AP000959, Z95152, AC006126, AC005670, AC008249, AC004825, AF098219, AC005237, AC005531, AC004386, AC016831, AC005519, Z97184, AL050332, Z93017, Z99890, AC000793, AC006251, AC007637, AC005253, AC007151, AC002398, AP000216, AC009387, AL079340, AP000553, AC006650, AL078476, AC004876, AC005846, AP001053, AC004929, Z93241, AC006211, AC004838, AC008056, AC007191, AC005154, AP000692, AL0049745, AF000047, AC007227, AC003119, AL132994, AF047825, AC006999, AC002307, AC005274, AC005071, AC004895, AL049830, AC009227, AC005089, AP000115, AL031432, AC012085,
HDTIV26 HDTIV41	2029 2030	799855 799853	1 - 409 1 - 641	15 - 423 15 - 655	

					AF053356, AF196972, AC002133, AC002404, AC004019, AC008064, AE000458, AC005755, AC005921, AL049557, AL109628, AL031228, AC005255, AL117330, AF077058, AL022322, AC000885, AC005244, AL049779, AC004999, AC006127, U78027, AB001523, AB023054, AF001549, ZS2976, AC002310, D84394, AC007298, AP000253, AC005763, AC005060, AC004228, AL133371, AC007537, AC007536, AF198131, AC006277, U78023882, AF165147, AC007388, AL035422, AC006128, AP000114, AC007731, AC006195, AC005548, AC006571, AP000962, AC005947, AC006452, AL030115, AC017286, AP000548, AF196779, AF000338, UI8398, AC002470, AC005209, AC005295, AC002543, AC002128, AC005799, AC002039, AC006511, AL035458, AC007091, AC005002, AC004955, D83989, AL008730, AL031319, AL132718, AC005815, AF000213, AC007683, AC005019, U85195, AC005632, AC007608, AP000135, X75335, AC002430, AL020995, AC003009, AL003566, Z81357, U80017, AC005969, AC004993, AL049759, S42653, AC004234, AC003670, AC007384, AC004972, AL035542, AC005693, Z84469, AC007488, AC002477, U78049647, AC004999, AC005899, AC004941, AL031848, AC000052, AC007226, AL136295, AC007043, AL034429, AF129756, AC007666, AC006449, AC007682, AC006023, AC006023, AC007564, AL031666, AC005500, AC007934, AC005378, AP000031, AC005914, AC004099, AC004808, AC004206, AL031273, AF196969, AC007182, AC005839, AC005768, AC005562, AL049748, AC000067, AP000354, AL096775, AF000432, X54175, and AF102092.
					AA736584, AW075941, AL0013986, AW075748, AA480329, AA749202, AA804593, AL1214324, AAO97245, AA005861, AA806181, AR125149, AH79015, AT766668, AL112426, AL134900, AL134929, AD250538, AL334885, AL179810, AL107204, AL309438, AL140732, AL149156, AL134899, AL271248, AL307713, AL124312, AL107488, AL223564, AL053668, AL223777, AL340417, AL149701, AL304926, AL026593, AL040620, AL069683, AL039086, AL174093, AA640841, AL250646, F37409, AL633061, AL1500658, AL918434, AA368725, AL196654, AL638489, AH21149, AW020619, AL249375, AT702527, AR666573, AW080157, AL706730, AL819377, AL421662, AW020381, AL638582, AC004687, AL133607, Y10080, L40386, AF067737, H42402, U76419, AL050393, AF107018, AF004162, AF013249, Y10080, AF105427, AF074604, AL117590, S69510, Z4896, Z82022, A41575, AL137463, X98066, A83556, I29004, X66417, X60679, AL133608, Z49258, AF084644, AF084645, U80742, AL133049, AF112208, AR012379, AL133557, AF199509, Y13998, AF126372, AC005156, AL080124, and AF038847.
HDTTIA54	2033	790856	1 - 66	15 - 80	
HDTTIC51	2034	790850	1 - 313	15 - 327	
HDTTH16	2035	918631	1 - 846	15 - 860	AW117866, and AA279193.
HDTTH17	2036	790834	1 - 539	15 - 553	R33692
HDTTH02	2037	913787	1 - 163	15 - 177	



HDTJ155	2038	856558	1 - 1012	15 - 1026	AI123328, AF161674, AI028395, AA883324, AI094492, AW340221, AI082842, AI739107, AI350596, and AI219506
HDTJ831	2039	851897	1 - 574	15 - 588	AA631510, AA847102, AA370673, AA484892, N76216, T48723, F27015, AI683552, AI624551, AI044271, AF121178, AA538366, AI446205, AW270768, AW080074, AI814059, AI291037, AA603400, AA297195, AA968509, AW277174, AI636439, AA502110, F32248, AI062808, AI045298, AA535494, AA493840, H72688, AI245423, AA503144, N25079, AI809688, AI890102, AA833814, AW189550, AI895580, H85059, H71642, AI075876, C13996, AI469577, AC005529, AC007314, AC007676, AC004882, AC004882, AC002115, Z97055, AC008071, AC002465, AC007638, AC002302, AC006398, AC005332, AC006139, AC005690, AC005235, AC008012, AC004874, U91323, AI034423, AC007529, AC004862, AC002480, AC005235, Z83822, AI035361, AC004381, AC005183, U91319, AC003957, AP001282, AP000514, AC006064, AP000466, AP000108, AP000040, AC007425, AC000026, AC004616, AI802085, AC007450, AC005041, AF049895, AC002059, Z97876, AI033376, AC005018, AI034379, AI035089, AC004887, AI009181, AC005598, AC003976, AC006547, AC005049, U95740, AC004834, AI008718, AI008729, AC007011, Z84480, AI021707, AC004033, AI031728, AC002288, AC005011, AC005046, AP001054, Z99774, AC005409, AC006213, AC000072, AF001548, AC005104, AC000120, AC005243, AI122020, AC004551, L77569, AC004865, AI121653, AC005104, AC002095, AI034555, AI133445, AI132987, Z85999, AC004098, AC005004, AF001552, AC004808, AC002496, AC004093, AB001523, AC006359, AC003072, AP000301, AP000212, AP000134, AI117375, U89335, AI020989, AC009464, AF205588, AC005393, AI022162, AC007860, AC006013, AC004895, AC002563, AC006544, AI035633, AC009263, AC004073, AC006947, AC004594, AC004542, AI021395, Z98200, AC007637, AF099810, AC005881, AC004216, AI021940, AC004542, AI021395, Z98200, AC007637, AF099810, AC003682, AC004694, AI031643, AI023328, Z84466, AC009225, AP000111, AP000153, U52111, AI031904, AC006096, AP000088, AC004745, AC005971, AF000031, AC005086, AF000031, AI009179, Z81365, AC009743, AI031673, AC009247, AF019664, AC005086, AF000031, U91318, AI021877, AC005548, AI004799, AC003106, AC004876, AI040778, AF047825, AI034343, K03021, Z85989, AF045430, and AP000152
HDTJ018	2040	805597	1 - 508	15 - 522	AC001096
HDTJ170	2041	918563	1 - 1094	15 - 1108	AA399660, and AA397890
HDTJ706	2042	934242	1 - 412	15 - 426	
HDTK788	2043	799865	1 - 566	15 - 580	
HDTK014	2044	886936	1 - 541	15 - 555	AI023653, and AI0404683
HDTK528	2045	885471	1 - 512	15 - 526	W07055, N98814, R19346, AA461032, Z20457, W03772, W77921, AF155739, and AI050171
HDTK106	2046	934269	1 - 722	15 - 736	
HDTK589	2047	799829	1 - 690	15 - 704	AI037304, AI184565, and AC004492
HDTKZ74	2048	799842	1 - 626	15 - 640	AC006378

HDTLA08	2049	958307	1 - 480	15 - 494	AL299823, AA918074, AA134073, AA484892, AA578492, W60522, AA526413, AII50934, H86399, AL049539, AF129756, AC005800, AC004929, AL080243, AC007688, AC002316, AC003353, AC005095, AC005971, AC006006, AC004216, AC002369, AC004491, AL020997, AF053356, AL096712, AC007685, AC005231, AL109938, AL132712, Z98946, AC007386, U196629, AL139054, AC005082, AL049569, AC004832, AC005529, AL024498, AC031591, AC001198, AL022320, AC006312, AC007684, AL035455, AL050308, Z84487, Y14768, Z97053, AC004858, AP000505, AC007057, AL049872, AC005207, Z93241, AC004882, Y14768, Z97053, AC002395, AC002310, AC005899, AC005004, AF109907, AP000555, Z80897, AC002477, AL031207, AL109653, AL022396, AC005933, AC004025, AC004685, AC005332, AC005496, AL035494, AL033392, AC007283, AC007425, AF067844, AF009007, AP000555, Z80897, AC002477, AC007536, Z82208, AC002985, AC020663, AL049712, AF134726, AC008067, AC002301, AL109627, AC003665, AL133216, AL132777, AL049760, AL021937, AC004531, AC007160, AC002347, AL009181, AC004448, AC004655, AF064861, AL031733, AC005566, AL109628, AC005694, 1107000, AL034553, AC005837, AC002312, AC007707, AC005015, X03120, AL035681, Z82730, AC004429, AC004854, AF196779, AC005690, AC005924, AC006333, AC002126, AL021391, AC005740, Z98745, AC007324, AL031005, AL035587, AC002425, AF165926, AC007488, X01392, AL117258, AL031277, AC005261, AF045555, AC004036, AC005527, AC005224, AC005225, Z54246, AC007690, A1010770, AC015853, AL136295, Z93023, AF111169, AC004013, AC006079, AC005941, AL031282, AC007014, AL049795, AC005678, 100498, AC002565, AC006211, AL121578, AF047825, AC005736, AL022324, AC006449, AL049589, AL135744, AF000350, AL031311, AL049869, AC002363, AC005049, AC005846, AC006576, AC006064, AL031657, AF207550, AP000557, AC005632, AC000379, AC006236, AL121603, AC004659, AL031283, AC004149, AC007226, U89337, AC006459, AP000358, AC004099, AP000251, AL000091, AC006251, AL096763, AC006538, Z97055, AC005081, AL049830, AF196969, AC005668, AC007240, AL035664, AC005821, AC005914, and AP000141.
					R54209, H040999, AA179219, M62122, AA141551, W24376, and AA376209
					W27300.
HDTLA53	2050	851826	1 - 635	15 - 649	AL349849, AI590485, AI345695, AI345366, AI108573, AW168420, AA382073, AA605272, AI755214, AI754105, AA805546, AA829044, AA228349, AA953238, AA238280, AL042635, AI754567, AA515905, AA126450, AA748833, AA744018, AA244339, AA410828, AA288334, T11828, AC004832, U91326, U91321, AC004525, AC007708, AC005081, AC005015, AL049832, AC002544, AL022336, AC005089, AC002407, AC003982, AC006236, AC002351, AC007981, AC007324, AC006537, AP000130, AP000208, AC007325, AC005684, AC007879, AL021546, AL049780, AF001552, AL049539, AL121580, AC004858, AC006441, AC004848, AC004929,
HDTL51	2054	851846	1 - 524	15 - 538	

					AC006261, AC006039, AL035659, AC005874, AF134471, AL109865, AC002402, AL035495, AC000029, AC007327, AL050318, AP000503, Z82190, AL031730, AC004820, AC006023, AC002350, AC008372, AC006948, AL035086, AC004494, AC004149, AL109628, AC008009, AP000550, AL035045, Z92542, Z84466, AF109907, AC007686, AC002302, AC005580, AC000117, AC005410, AL031680, AC005332, AC007899, AC008132, Z97056, AF004382, AC005324, AC006011, AC002477, AC005919, AP000513, AC009263, AC007676, AF000694, AF024533, AP000246, AF047825, AC004813, AC005952, AC002996, AF048729, AC007358, AC006316, UP6629, AC002045, AC007546, AC005538, AC006343, AL031594, AL133448, AL049636, AP000354, AC005841, AC007649, U47924, AF196969, AL034429, AL008715, AL009181, AL049569, AC001203, AC005482, AC005225, AC0068018, AC005011, AC004675, AC004987, AF134726, AL021134, AP000350, AL049830, AC007367, AC007566, AL049869, AC008079, AL021707, AC005358, AL078477, AC002352, AC018633, AC006487, AC004972, Z86064, AC005412, AC004106, AC009248, D87675, Z93023, AC005228, Z95329, AF020997, AC005914, AL049793, AC007114, AL008718, AP000152, AL031313, AL049760, AF088219, AC007564, AC005368, AC003046, AC002511, AC004605, AL022165, AF029308, AC005066, AP004213, AC007055, AC003010, AC002470, AC007488, AL121754, AL001523, AC005050, AC009363, AC005722, AB023048, AC004975, AP000031, AC002565, Z85986, AC004491, AC004801, AL133246, AP000135, and AC009288
HDTLN80	2055	805562	1 - 605	15 - 619	AW372827, AW392670, AL019443, AL019443, AL037205, AW363220, AW384394, U46341, AL119319, AL119497, U46351, AL119324, AL119457, Z99396, U46449, AL119341, AL119484, AL119391, AL042965, AL119496, U46350, U46347, AL119355, AL119363, AL119444, AL142132, AL119483, U46346, AL043205, AL119335, AL134524, AL119439, AL119401, AL134902, AL134528, AL119399, AL039851, AL119522, AL134525, AL119396, U46345, AL042850, AL119464, AL119418, AL134536, AL134538, AL042973, AL043003, AB026436, AR054110, AR066494, AR1671, AR060234, and AR069079
HDTLN72	2056	799837	1 - 343	15 - 357	AP000224, and AP000086
HDTLN724	2057	799838	1 - 615	15 - 629	AL049631
HDTLN755	2058	950633	1 - 494	15 - 508	
HDTLN714	2059	799847	1 - 457	15 - 471	AF067844, and AF143316
HEIAA07	2060	920257	1 - 300	15 - 314	AC003695, and AC002091
HEIAA38	2061	907594	1 - 332	15 - 346	
HEIAB13	2062	677400	1 - 339	15 - 353	
					R32529, W95563, T85989, AA316471, AA046028, AA152270, T87538, AA150254, H67429, R68856, AW406467, T97847, H95214, H58974, H94342, R98261, T99568, T87539, and AP991836
HEIAB27	2063	683474	1 - 313	15 - 327	AA768235, AA768974, AA767660, and AF033033
HEIAB68	2064	721652	1 - 68	15 - 82	
HEIAC83	2065	920022	1 - 148	15 - 162	AL890971, AA323085, AA332599, R87547, AA196160, H04821, N83628, AA687084, AA502236,

					AA555085, AL134615, AL127133, AW439625, AP962973, AW439820, AL859849, AA683073, AL081241, AL052770, R69109, AA625787, R66922, AA744698, AL702364, AP000555, AL049563, Z86061, AL035417, AC007842, AC005043, AF001552, AC005233, AL109938, AF121782, AL034423, AC005180, AL031407, AC004682, AL031003, AC007052, AL050325, AC004931, AP000151, AL139054, D83253, AF064857, AC004955, AL031430, AP000009, AC005229, AL022328, and AC009396.
HEIA005	2066	932397	1 - 295	15 - 309	AA659298.
HEIAE05	2067	932390	1 - 211	15 - 275	AL688963, AA308708, AW020449, AL914747, AA325521, AL537814, AL811076, AA658101, AA432879, N55560, AL261932, AL863180, AL044468, AL888705, AL755057, AA767864, AL801031, M85982, AL140609, AW079345, AL580252, AL111171, AL684349, AA668736, AA121818, AA227741, AL434725, AL188963, AA419521, AA406457, R71593, AA278573, AA078248, AL798234, R12683, AL078602, AC001556, AP000499, AC003665, AB026898, AL031428, AF008243, AC005083, AC005015, AC004167, AC008015, AP000160, AP000018, AC003950, AC004104, AC004787, Z54246, Z95331, AF001549, AL139054, AC005581, AL049745, AC001228, AP000555, AC007242, AC006990, AL133241, Z93244, AC002430, AP000553, AC005089, AL020997, AC007384, Z49862, AC007666, AC007277, AC000052, AC004019, AL132777, AL050317, AL022316, AC005513, AC005545, AL008716, AL024509, U82828, AC004876, AC004032, AC004143, AL031779, AC005409, AC008372, AC007011, Z68162, AC003966, AC004738, AC005670, AC004106, AC004967, AC004590, AP000556, AP000557, AB017335, AC004914, AC002301, AC004878, AL031277, AC018633, AC005781, Z84466, AC005666, AL031680, AL049636, AC000353, AC006111, L34079, AC000404, AC004084, AP000167, AP000013, AP000155, AL050318, AC005837, AL023807, AC005562, AC008116, AL006216, AC005257, AP000171, AP000056, AP000124, AC004865, AP000330, AC004638, AC005325, AC007773, U91321, AC004752, AC005049, AC006344, Z98941, AC004884, AL035413, AL109865, AF024533, AC002511, AC002996, AC005088, AC004985, AL002025, AC007376, AL011930, AC006241, Z93784, AC003077, AP000067, AC005211, AL009181, AC005482, AC005391, AC004777, AC005796, AF051976, AL117375, AL050327, AC004453, AC009320, AL008639, Z85987, AC007558, AL049709, AC005086, AP000432, AC0066531, AC007546, AL049553, AC0066536, AC004841, AL080317, AC007390, AC005914, AL031848, AC020663, and AF001551.
HEIAH70	2070	757174	1 - 330	15 - 344	
HEIAI53	2071	466308	1 - 420	15 - 434	
HEIA001	2072	916438	1 - 290	15 - 304	AC006241, LId7924, AL035400, and Z97053.
HEIA014	2073	851197	1 - 398	15 - 412	AL445914, H81732, AL096738, AA330155, AP063183, AL813783, AL1358542, AA501781, AA746939, AL180617, AW008161, AA337000, AA654874, AL038842, AA776651, AA745096,

AL021348	AL083131	T08015	AW023515	AL145497	AL690497	H733550	AL1041458	AL624241
AL459943	AP001053	AC007582	AC006455	AC004817	AC005746	L007362	U83195	
AC025063	AC006058	AC005578	AC004167	AL078595	U91629	AC003037	AC010170	
AL021261	Z86064	AC005335	AP000330	AC004620	Z69721	AC004854	AL031606	
AC005391	AC005379	AL049692	AL035604	923845	AC002470	AC003108	AL109758	
AL049874	AC005088	Z54146	AL02395	AC007199	AC005529	AC005412	AC006125	
AC007308	AC005059	AC007110	AC004560	AC004887	AL034417	AP000699	AL022153	
AL021913	AC004644	AC005913	U65899	AL035420	AC007151	AC0004813	AC005393	
AC004139	AL021154	AC003963	Z83845	AL096701	AC004132	AC005049	Z93017	
AC006111	AL004492	AC004026	Z98050	AP000288	Z93023	AF102137	AF060568	Y10129
Z92344	AF030433	AC007002	AL133245	AL049811	AC004067	AF196779	AC006057	
AC005037	AC005162	AL035455	AC006262	AL031846	AL031664	AL031286	AL021707	
AC004125	AC006538	AL031311	U91321	AC005832	AC000039	AC002117	AC002302	
AL096801	AC003109	AL115746	Z97053	AC005383	AP000283	AC007388	AC005387	
AP000284	AC005070	AL031432	AC008033	AC0068015				
AL453129	AC002310	AL031295	and	AL090174				
AL023096								
AL010108	AW130937	AA829185	AW197946	AC004540	Z08751	and	AC009498	
AL633518								
AP100620	AC005520	AL031432	AC004876	AC008124	AC005871	AC005822	Z72749	
AC004985	AL109758	AC003332	AC004084	AC002378	and	AC006111		
AW238796	AL446252	W47453	and	AB011164				
AW118893	AA448473	AL376031	AL191852	AA093690	AL18630	TT5650	AL014894	
AA432607	AA432010	AL186348	and	AL3403				
AL043294	AL045130	AL190043	AL1553975	AL041295	AA837456	AL678979	AA610597	
AW118951	AL0516395	AL027758	AL8094315	R46582	AL688011	R82289	AL090854	AA426089
AL540672	R21690	AA634501	AL286300	T94608	AA477176	AL1589160	AL024524	AL86060
AL194226	and	AW299557						
AL035091								
AC004884								
AC000997	and	AC005538						
AL546093								
HEIAOH8	2074	917281	1 - 366	15 - 380				
HEIAOS1	2075	725649	1 - 210	15 - 224				
HEIAOT7	2076	953574	1 - 348	15 - 362				
HEIAT36	2077	576598	1 - 497	15 - 511				
HEIAU68	2078	753000	1 - 211	15 - 225				
HEIAY20	2079	523766	1 - 346	15 - 360				
HEICX82	2080	781171	1 - 371	15 - 385				
HEOAB19	2081	939448	1 - 308	15 - 322				
HEOAB29	2082	690762	1 - 487	15 - 501				
HEOMIC23	2083	850094	1 - 391	15 - 405				
HEOME43	2084	967292	1 - 1957	15 - 1971				
HEOMF61	2085	573059	1 - 431	15 - 445				
HEOMG01	2086	916672	1 - 490	15 - 504				
HEOMG04	2087	922824	1 - 67	15 - 81				
HEOMG16	2088	933969	1 - 464	15 - 478				
HEOMG25	2089	678190	1 - 695	15 - 709				

HEOMG32	2090	699343	1 - 410	15 - 424	AC005247
HEOMG48	2091	963338	1 - 470	15 - 484	AW170594, AL62386, AA319071, AP000504, AF129736, and AF109905
HEOMG78	2092	920911	1 - 831	15 - 845	AA206565, R08750, and R71112
HEOMH04	2093	854342	1 - 1294	15 - 1308	AA878325, AL467795, H06058, AL142916, H59844, and R48574
HEOMH31	2094	951834	1 - 589	15 - 603	AB01169
HEOMH77	2095	721342	1 - 401	15 - 415	AA349137
HEOMH89	2096	787109	1 - 358	15 - 372	AT068609, AA350845, AT140661, AW207100, AW382915, R85713, AK80236, H38087, AP94926, AL285352, and AL245621
HEOMR83	2097	918374	1 - 480	15 - 494	AB029488, and AC002536
HEOML13	2098	893874	1 - 340	15 - 354	AC002425, and AC002544
HEOML73	2099	724043	1 - 405	15 - 419	
HEOMM10	2100	964736	1 - 364	15 - 378	
HEOMN02	2101	913819	1 - 548	15 - 562	
HEOMQ03	2102	855659	1 - 412	15 - 426	
HEOMQ57	2103	795128	1 - 472	15 - 486	
HEOMP31	2104	698087	1 - 364	15 - 378	H64717, and H65208
HEOMP73	2105	750609	1 - 407	15 - 421	AL008628
HEOMQ17	2106	851049	1 - 630	15 - 644	AA523718, AA556600, AL042630, H55927, AW117723, AW117704, AL287787, H74201, AA528557, H62615, AP14558, AA206036, AA348884, AH73501, AC006566, AC005837, AC003663, AC007016, AC008372, AC004193, AB023057, AP000520, AC007590, AC007189, AL29321, AL034350, AC002487, AC005668, AC006992, AC004653, AC005838, AC004079, AC005915, AF055066, AF054594, AF035666, AC007652, AP000008, Z79028, AC005823, AC004134, AL049697, AC005821, AC004531, and Z82198
HEOMQ75	2107	965882	1 - 560	15 - 574	AL033522, AL137100, AC005089, AC005899, AC004031, AL080243, AC007688, AC007707, Z82178, AC004686, AC005488, AC022517, AC006581, AL031662, AC005072, AC005529, U91323, AC004963, AL009181, AC002425, AL031659, AC004878, AC005722, AC004531, AC003101, Z84466, AC005015, AC004616, AC004966, AC005800, AF006752, Z84487, AC005996, AC002302, and AC005479
HEOMQ80	2108	835599	1 - 431	15 - 445	AA136577, AB06102, AB06830, AW080440, AW130093, AA120563, AW02817, AW025074, AA101113, AA502991, AW148507, AA630672, AA837087, AW403644, AA127426, AA483108, AA809546, AW177794, AA583872, AW177801, T77680, AB27614, AB11960, AL193325, AW328000, N23504, AL524360, AW128884, AW128900, AA648337, AA654661, T06017, AA455483, AL537458, H68017, N83299, AA633762, AB027344, AL037052, AA3326139, AA552955, AA402129, H25921, AA331301, AP007530, AB086646, AA487872, AA845659, AA380354, AB656774, AL119600, AA773463, AA847095, AW250026, AA551181, AA029872,
HEOMR13	2109	657317	1 - 657	15 - 671	

HEOMR57	2110	575739	1 - 298	15 - 312	AA092571, AW081303, H82185, AA345064, AA663512, AL046402, AA709429, AL045954, AA070345, AA828637, AA93136, AL638635, N71685, AA847096, AL798493, AA370455, H12383, AA807583, T47084, AW270258, H93097, AW168520, AL009182, AC007461, AC004963, AL034401, AC004655, AC005191, AL031033, AC005602, Z82214, U15177, Z98036, U81031, AC006028, AC002070, AL049778, AL122021, AC007381, AC005796, AC006323, AC009044, AC006057, AL049540, AL165142, Z93241, AL080285, AL121877, AC005237, AL008719, AC006312, AC004497, AC002106, AC004036, AC005207, AC005949, AC006125, AC005626, AC005955, AC004975, AP000096, AL05701, AP000240, AF069291, AF015262, AL229043, Z83844, AC000029, Z83822, AL050336, Z98752, AF200465, AC007057, AL049872, AR036572, U01328, AL021397, AC002073, AC007226, AL015089, AC005730, AP000362, AL031297, AC004000, AL021154, U78810, AL121782, AC005377, AL021546, AC006552, AC005214, AC006365, AL133353, AC005011, AL022721, AC004612, Z69719, AC006774, AL049576, AC004548, AL035460, AL031667, AC004098, AP000967, AL049569, AC003101, AL031186, Z69917, Z82976, AL035681, AF017115, AL033376, AC005245, AC005366, AP000563, AL021330, AC006039, AP000246, AP000211, AP000133, AP000208, AP000130, AL049539, Z86061, AC004525, Z94721, Z84487, AC005726, AC005529, AC004966, Z69925, AC002288, AC007205, AL008637, AL031597, AC002299, M63796, AC005924, AL030995, AL023553, AL078639, AC007227, AC006273, Z81364, AC006958, Z98744, AC005476, AL049861, AF064858, AC006165, AC000070, AF049895, AL033527, U91321, AF002991, AC004152, AC007191, AC003109, AC004532, AL022138, Z98946, AC010170, AC009330, AC005081, AL131163, AC006315, AC004531, AC005682, AC004685, AL110502, Z81000, AC006930, AC005578, AC005838, AL121591, AC004707, Z97056, AL110502, AC006487, AC004999, AC006013, AC006950, AC005952, AP000255, AP000255, AP000213, AL096763, AC004070, AP000135, AP000031, U91326, AL022318, AC006313, AB023051, AC004644, AP000251, AP000030, AP000134, AP000212, AC004542, AL132642, M87914, AL008723, AC005500, AC004821, AL031985, AF135025, AF084941, AF052685, and D86992.
HEOMR92	2111	963130	1 - 397	15 - 411	AF150377.
HEOMR96	2112	835652	1 - 646	15 - 660	
HEOMIS08	2113	959581	1 - 193	15 - 207	
HEOMIS65	2114	969184	1 - 474	15 - 488	AA355836.
HEOMIS85	2115	602928	1 - 400	15 - 414	AC003695, and AC002091.
HEOMIS92	2116	715720	1 - 341	15 - 355	AL377718, AA810404, AA810193, AL1919569, and AA732716.
HEOMI18	2117	850980	1 - 433	15 - 447	AA281179, and AA809453.
HEOMI79	2118	936687	1 - 502	15 - 516	T87253, U73628, and AC002554.
HEOMI07	2119	953475	1 - 244	15 - 258	AC012085.
HEOMI23	2120	675971	1 - 374	15 - 388	R25873, AA730123, AL192759, AL1928610, AL1985694, AW130285, AL022067, and U08185.

HECOM/79 HECOM/11	2121 2122	965900 847274	1 - 543 1 - 282	15 - 557 15 - 296	
					AL048427, AL119511, AW151974, AL434242, AL538850, AL538885, AL872423, AL600472, AH445620, AW058275, AL866469, AL500714, AL859991, AL866003, AL432644, AL440290, AL537677, AL494201, AL804505, AL500659, AL815239, AL866465, AL815232, AL801325, AL866691, AL500523, AL887775, AL589932, AL923989, AL284517, AL590043, AL500706, AL445237, AL491776, AL926593, AL289792, AL511138, AL889189, AL521560, AL500662, AL285417, AL519800, AW172273, AL582912, AL284509, AL889168, AL440263, AL027233, AL866573, AL633493, AL434256, AL805769, AL888661, AL952433, AL284513, AL888118, AL285439, AL436429, AL889147, AL023736, AL355759, AL810333, AL1610557, AL431316, AL440252, AL431307, AL282249, AL440238, AL567971, AL866786, AL610557, AL431316, AL242736, AL539260, AL828574, AL887499, AL59781, AL431238, AW081122, AL702065, AL539707, AL885949, AW089557, AL559957, AL285419, AL521571, AL469773, AL866581, AW074057, AL815150, AL567953, AL446495, AW151979, AL867068, AL225248, AL538271, AW151132, AL098352, AW022636, AL809097, AL225000, AL371229, AL431323, AA477608, AL042365, AW169213, AL538881, AW079432, AL923061, AL687614, AW194509, AL047422, AL539771, AL891102, AL879377, AL047398, AL866458, AL469764, AL371251, AL866510, AL023302, AW081133, AL538764, AL866461, AW151136, AL923046, AL043152, AL554485, AL887785, AW130168, AL043168, AL490859, AL041862, AA651819, AL561170, AL048403, AL690946, AL889191, AL048567, AL042686, AL046356, AL433157, AL610426, AL554821, AL045500, AL589947, AW129310, AL819663, AA729782, AL119457, AL12428, AL540446, AL564459, AL273179, AL934000, AL368816, AL371243, AW058279, AL434240, AL042533, AL702406, AL039390, AW080700, AA641818, AL671642, AL860865, AA878808, AL961589, AA738104, AL582910, AL687587, AL798359, AL500063, AW079158, AL556470, AL493559, AL042655, AA939199, AL555008, AL521566, AL499104, AL274759, AL046900, AL493089, AL042416, AL539863, AL366900, AL433976, AL045466, AL042488, AL240511, AL043089, AW161202, AL049550, AL366910, AL469516, AW071349, AL494245, AL561177, AW020419, AW082113, AL040459, AL047611, AL040207, AL582926, AL049851, AL491904, AL040844, AL043321, AL365256, AL565932, AW080565, AA070889, AA575874, AL499463, AA648480, AL045626, AW191003, AL355126, AL373787, AL564500, AL045166, AW071339, AL554981, AL273175, AL521389, AL310500, AL537273, AL537191, AW151970, AL371265, AL450436, AL046681, AL039287, AW004595, AL887765, AL963846, AL049856, AC015853, AF055917, AK04821, AL080129, AF100781, AL050092, AS8524, AS8523, U30290, ET2580, AL122049, AL117460, AL45787, AL33049, AL33084, AL133070, ET2579, AK01880, AL48978, AL123053, AL137558, AL049423, AF118090, AL133015, AL133608, AL110159, AL137656, AL035458, U09434, X67813, M79462, D44497, AL049314, AL122101, AL096720, A08910, AL050824, A08909, AF084644, AF084645, AF114168, Y11254, U77594, AL122100, A08908, U68387,



				AF008439, Y11587, AF068466, AF067728, E13998, E06743, Y10655, AL117438, X95876, ZS2022, AL049452, X72889, X82434, AB022159, AL137463, AL133629, AR038854, 199592, D00174, Z37987, AL050138, Y000993, AL133665, S77771, AF113694, I46765, AF138393, L13297, A08912, I89947, AF002985, AF161699, I48979, AF026008, AF137367, U15846, AF043642, AC004213, AL049465, U92992, AF113677, L19437, L10353, AF079996, I17767, E15324, X54907, AF038440, AL117435, AL133072, AF077349, AR020905, A0001838, X70685, X72624, M40514, M85165, AL133607, A91350, AF017152, AL10221, AL050108, AF061981, AL080126, AL049466, X98834, L24896, X72387, S61953, S75907, AL137429, U13676, AF118558, I09499, U57352, AR005011, Y14634, AL137480, I03321, AF162270, AC007114, X81464, AF113690, X76228, I28326, AF118064, X87582, Z72491, AL137648, AF000301, AL133010, AL137548, AF151109, Z97214, AF081195, Z82206, X56530, E03348, Y10823, AL137640, AL137523, U58996, AL137529, AL133508, AL080148, AF106862, U72620, E12747, AF074604, AF215669, AL137560, AL122111, L30117, AF026124, AL050116, U66274, A12297, AL137292, AF000145, AL137287, Z49258, AF095901, Z93784, A32826, A30330, A32827, A30331, AL080060, Y11435, AF012536, AF076464, AF017437, AF119336, Y10936, AF081366, AF093119, AF069506, A44314, AL049464, S69185, AL133655, AL117585, A07647, X93405, AF08357, X53587, A08913, AL008706, I00714, A70386, U75932, AF078844, S63521, AF118994, AL133558, A41579, X60796, AL137478, A77033, A77035, A08916, AF079993, AL137271, AR012379, AL133016, E00617, E00717, E00778, AF016271, AF119358, AL137521, AF040720, A012755, AL137479, AF081197, AL137476, AL122123, AL021213, AL15345, AF067790, AL122110, AL137283, AL080159, I33392, and AL133081.
HEOMV16	2123	958211	1 - 452	FI1697, AA194124, AC005999, AC006547, AC005663, AC005664, and AC005160
HEOMV54	2124	866386	1 - 518	AL181924, AL139693, AA658096, AW340876, AW196652, AW388936, AW117675, and AL146863.
HEOMV81	2125	915093	1 - 491	Z85996.
HEOMW26	2126	418125	1 - 386	
HEOMW83	2127	659608	1 - 341	
HEOMX04	2128	615337	1 - 287	
				AL1399389, N49368, AL433008, AL344822, AL611016, AA618452, AL271126, AL137998, E69717, AL744826, AW269117, AW385452, AP63720, AW303002, AA018283, AA490183, AA780468, AA349927, AL039958, T41247, AA661921, AL1307486, W74144, AL345157, AF001099, AA483929, AL138455, AL249573, AL732151, AA279421, AW264934, AL694130, AA724922, AL74070, AL041619, AL046409, AW069769, AA486131, AL754336, AA533333, AL1306324, F00107, AF0780515, AW003107, AL138396, AL925579, AA482711, AL610603, AL696962, AL169580, W77787, W23692, AA838190, AW088846, AA654781, AA480792, AL791913, F05324, AL792133, AL821714, AA206721, AA493136, AL610840, AA553406, AA218835, AA7224, AW190615, AA478355, AL013303, AL099588, AA493894, AA774059, AL193931, AL004704, AA834707, AL720117, AW088616, AA630672, AL045808, AL046156, AW023990, AW268757,

AA613591, A1088768, A1285753, AW268918, AW30150, AA584195, A1043753, A1312955, AA601253, A1597820, A1953275, AW163293, A1271028, AA579179, A1792261, A1204959, AW328488, AA493975, A1524037, A1037850, WA58625, AW302903, AA572798, A1907711, AW255120, A1217937, A1033025, A1119713, A1715857, AA638406, AA3844692, H71429, AW290624, AW167881, AF034184, AA455670, A1823688, A1027459, T06822, H23635, AW148507, A1011462, A1084294, A1583283, AW112692, A1212672, AA831787, AA084337, H86363, AA640410, AA640430, A1037683, AW161798, AA584201, A10104030, A1031373, A1383561, AA101689, AA584805, A1284640, A1094787, A102846, A1345827, A1370074, A1745253, A1043289, T92944, WA235497, AW263415, A1167356, AA5508359, A1687343, A1027554, A1045814, A1044940, A1349817, A1046746, A1046266, A1924476, AW268954, A1203434, A1045814, A1109758, A1022277, AF1199339, A1006972, AF084195, Z99943, A1004881, A1006442, A1004687, A1005363, A1P005507, A1005684, A1034028, A1109984, D8494, Z80511, A1009179, A1006101, AF165176, A1005839, A1004916, A1078463, A1002507, A1004650, A1005728, A1002452, Z72001, A1005839, A1004916, A1078463, A1004765, A1003070, X06123, X61109, A1006537, I162293, A1005057, I180017, A10058914, A1031228, A1049829, A1008036, A11098359, A1004979, A1163175, A1007200, A1004987, A1079340, A1004982, A1006305, A1009223, A1049761, A100657, A1005291, A1078389, X69951, A1P000204, A1P00126, Z95124, A1004254, A1049761, A1004070, A1096862, A1004849, A1002300, 1991318, A1133445, A1006430, Z95114, A1005046, AF015151, A141309, A1004030, A1005217, A10066323, A1005049, A1006965, AF126403, A1004492, A10042429, A10063536, A10057280, X03818, X55929, AB014078, A1000244, D87008, A1004761, A10055525, A1005790, A1005203, A1005604, A1007229, A1004209, D88268, A1006139, A1005355, A1004756, A1004775, A1022477, A1005031, A1049562, A117342, A1002348, A1002503, A1P00514, A1035694, A10012627, A1049544, A1031293, A1021155, A1002347, A10006205, A1004941, 1913139, A1005378, A1007057, A1049832, A1007655, A1022323, A1009404, A1008014, A10213807, A1007546, A1003005, A1049832, A1007655, A1022323, A1006459, A1006111, A1007537, A1007363, A1005859, AF02223, A1036572, 191328, A1004049, X54180, AF010880, Z83836, X03272, A1005575, Z84485, A1005320, A10023467, A1P00138, A1005231, A1031274, A1004601, A1024997, A1031664, A1008075, A1005906, A1004470, A1005406, A1P000014, AF038667, A1021397, A1P000339, A1004935, A1020316, A1031286, A1004022, A1003075, A1005295, A1004861, A1003074, Z93931, A1020316, A1007395, A1007011, A1018359, A1049872, X55933, Z92845, A1035361, A1022302, A10053182, A1033533, A1004913, A1033451, A1003982, A1006251, A10030957, A1005177, A1078603, A1006989, A1006226, A1008126, A1002457, A1006241, Z98941, 1995990, A1003030, AB026584, U63640, A1005603, A1004322, A1031300, A1P001843, A1035634, A1003691, A1P00282, A1007536, A1012599, A1P000108, A1P000400, A1034373, A1000159, A1004857, A1P000365, A1P000462, A1007104, A1005389, A1004773, A1P000548,

HEOMX61	2179	958233	1 - 535	15 - 549	AC007237, AC001231, AC005968, AL109753, AL031311, AL035552, AC004057, AP000473, AL034549, AL009172, AL117258, AC009743, AP000555, AB017654, AC006376, AC002449, AC005920, AC007637, AC006377, AC007514, AC005084, AC006160, AC005939, AC005815, AL133163, AC007919, AC006552, AC009399, AC004531, AC007073, AC009891, and AC005701.
HEOMX65	2130	575019	1 - 451	15 - 465	Z98579.
HEOMX92	2131	919200	1 - 422	15 - 436	N64579, T66032, AA196156, T47172, AA305334, AL124664, A537310, AA401240, AA761876, AA769559, AA404287, A925653, AA314294, AA381238, AA312605, AA032022, AA031911, AA425438, AA468322, F00487, AA420494, AA324750, U95740, AC004770, AL0409759, AL033524, AC006237, F00487, AL035458, AF086934, AC005572, AC005772, AL109623, AC006211, AC004938, AP000354, AC006996, AC002492, AP000964, Z98946, AL110122, AC002091, AC004084, AL022165, AL008582, AL023581, AC004888, AC006511, AC006057, AC006512, AL049829, Z47066, and AC007381.
HEONC06	2132	855649	1 - 643	15 - 657	
HEOND75	2133	918209	1 - 314	15 - 328	
HEON179	2134	506226	1 - 333	15 - 347	
HEONK15	2135	660365	1 - 430	15 - 444	H06248, H13011, M89651, and AF004222.
HEONM30	2136	692726	1 - 311	15 - 325	AC007032.
HEONM69	2137	855638	1 - 507	15 - 521	AC000393, and AF081946.
HEONN28	2138	745144	1 - 454	15 - 468	AL041375, A053477, AW274078, AH11513, AL376239, AW089016, AA225890, AA503298, AA664604, AW162047, AW162303, AA557945, AL014843, AA947375, AW270258, AW078909, AW191403, AW302315, AA609834, AA947265, AW141955, AW089950, AA657374, AL439910, AA478602, AW190484, AL865196, AA489390, AL243793, AA669234, AL610737, AL019187, AW243793, AA483606, AL572680, AL371208, AA299589, AL292317, AL565126, AA405726, AA570740, AA652834, AA492105, AA805848, T74524, AA287570, AH73671, AA720732, AW068908, AW068907, AA255853, AA568204, AB64738, AA469230, AA487475, AA608520, AL099889, AL049869, AC002316, M87914, AC007371, AC004491, AC004084, U47924, AC005089, AC006597, AC002996, AC006509, AP000689, AC007536, AC007637, S42653, Z86090, AL080243, AC005632, AL049776, AF196969, AC006948, AC004890, AP000704, AL096791, AL031848, AL049636, AL022326, AC007358, AP006688, AC005037, AC002543, AL031005, AC003098, AL035587, AF047825, AL096712, AL133396, AC004455, AL121653, AC002038, AC000087, AC005696, AP000092, AL049830, AL031776, AC004498, L24093, AC004796, AL023322, AC005837, AL049570, AC005800, AC009510, U07550, AL096701, AC005913, AL117258, AF05588, AL035403, AF001549, D87675, AP000252, AP000065, AP000556, AL034418, AL035088, AC001663, Z83844, AC006064, AC002312, AL023807, AL049692, AL133500, AC005081, AC003363, Z96200, AC006511, AP000154, AP000212.

HEONQ81	2139	792074	1 - 283	15 - 297	AC000353, AF048729, AC004887, AL009182, AE000658, AL121603, AP000090, AC005914, AC005871, AC005900, Z95152, AC002544, AC006312, AL031311, Z49866, AP000692, AC006211, AC004492, AC005736, AC002546, AC004859, AC005924, AL117337, AC005209, AL035685, AC004973, AC004953, Z69705, AL080317, AC002350, U85195, AL031985, AL034555, AC004024, AC007546, AC005476, AC004253, AP000008, AC006115, AC004815, AC002404, AC007327, AL121934, AL121658, AC004858, AC004754, AC004983, AC004453, AC005049, AC007421, AC004134, AP000553, AC012384, AL031681, AL135744, AC002381, AC005015, AC005568, AL133245, Z78833, AC005669, U91327, AL133246, AL021394, AL050443, AL049769, AC002301, AC000134, AC002365, AL021578, AL049795, D86995, AC005338, AC005409, AC008372, AC002390, AC004686, AC005899, AL049646, AL109952, AL049588, AL132987, AL022721, AC003070, AF027550, AC003104, AC006251, AC007216, AC004821, AC005277, AC006241, AC005274, AP000128, AP000206, AC004797, AC005538, AC006538, Z98884, AC035422, Z83838, AC006011, AC005796, AC006117, AC002310, AC009247, U95742, AC007199, AC004910, AC005808, AC005754, AL035458, AC005746, AC009516, AC002126, AC002091, AC006571, AC005488, AC007151, AC005775, AC007114, AC020663, AC007221, AL031597, AL035414, AC005856, Z99943, AC002551, U91323, AC007382, AC003684, AL049569, AP000355, AC005527, Z69942, AC003109, AP000555, AC005513, AC004841, AC004033, AL022343, AP000696, AC005291, Z97181, Z49258, AC008640, AC004019, AP000114, AP000046, AC005531, AC004466, AC002463, AC006501, Z49154, AC005255, AP000557, Z98050, AC005755, AF134726, AC005412, AC003110, AC004884, AC004659, and Z95115.
HEONQ81	2139	792074	1 - 283	15 - 297	AW392300
HEONQ93	2140	792377	1 - 368	15 - 382	AL1378653, and H97239
HEONQ08	2141	959556	1 - 699	15 - 713	AA532915
HEONQ19	2142	930705	1 - 897	15 - 911	AI625739, AW272001, AI435829, AA147072, AI609268, N91272, AA147105, AA834526, W27700, AI126003, AA602530, AA398168, AW294288, AW004619, AI202250, AL119565, AB007884, and AI250425
HEONQ58	2143	965881	1 - 506	15 - 520	AA683299, and AC005075
HEONQ05	2144	967588	1 - 340	15 - 354	
HEONQ69	2145	556544	1 - 355	15 - 369	
HEONQ26	2146	577429	1 - 491	15 - 505	AA845825, AA503018, AI862790, AI240919, AI246061, AI792537, AI270853, AI252826, AI254046, AI251643, AI435754, AW086343, AI224728, AW301997, N29930, AI271005, AI249565, AI254826, AW271081, AI224422, AI251312, AI252060, AW302086, AI254783, AI307025, AI472990, AI254056, AI254683, AI252493, AI252591, AI284764, AI294311, AW086227, AI435696, AI053574, AV167330, AI362942, AI682310, AI884861, AA857812, AA862014, AA340153, AI864500, AA468494, AI255060, AW271137, AI252996, AW302016, AA678616, AA662905, AI883019, AI289050, AA070473, AA728911, AI083495, AI284092,

AA364150, AI499941, AI185394, AI472782, AI191337, AI361090, AA633565, AA0804950, AA935380, T34558, AI119563, AA484892, AH21950, AW026305, AA605090, AI690335, AA486352, AW054936, AA468956, AI249853, AI284543, AI254770, AI798242, AI251944, AI251034, AI251203, AI251284, N76555, AI250552, AI279417, AA665304, AI570895, AW021007, AI049534, AA741301, AI138065, AA579399, AW192518, AW073821, HI9839, AW408767, AW90284, AI347605, AA644223, AA599749, AA381498, AI472736, AW265688, AI155246, AW328370, AA224525, AW405068, H86579, AA678932, H25626, F09355, AW081610, AA345594, N67313, AW342143, AA757426, AA610713, AI803741, H93152, AI889995, AA773881, AI538236, AI126814, AI671077, AI251241, AI678476, N75708, N25079, AA018923, AI063043, AA012829, AA244181, AI223626, AA197019, AA010775, AI591134, AA558366, AW019964, AW079667, AW303098, R35259, AI890753, AI343667, AI309121, W44359, F17537, T08386, AI863246, AA618240, AA678622, AA610255, N704497, AI791718, HI10454, AI860535, AA748071, AI285493, AA916430, AI312090, AI044488, AI312784, AI133906, AI133902, AI866996, AA426451, AI889426, AI520967, AI607000, AA572983, AI376197, AI567941, AA019542, AI679759, AI205783, AI523865, AI114653, AA714955, AA053463, AI889579, AI524957, AA632988, AA295893, AW087226, AA501441, AI559282, AI270442, AA083681, AC006010, AC005274, AC005804, AC007738, Z84466, AC004933, AI036549, U80017, AC005539, AF124730, AI031387, AC004111, AB014077, AC004209, AP000513, AI022578, Z92540, AC009399, AC002432, AF001549, AC004787, AC005031, AI13269, AI049611, AC005886, AI031651, AP000039, AP000099, AC005377, AC000036, AC005696, AC006501, AC004000, AP000046, AP000114, Z73496, Z96074, AF017104, AC002380, AI031177, AC005728, AI049591, AI022162, AC002531, AC002377, AI133246, Z94056, AF095901, AI031589, AI022394, AI024508, AC008499, AC010206, AF067844, AI132987, AC005740, AC006080, Z98946, AI035530, AC002538, AF217403, AI049650, AI022337, AC005071, AC002559, AP000688, AI035696, AC007253, AC005822, AC001230, AI008729, AI078593, AC011625, AI049176, AI035652, AC009330, AI034553, AC001231, AC005969, AI050350, AC005344, AC008119, AP000113, AP000045, AI049779, AC007546, AI035400, AC009542, AC008498, AI078581, AC004811, AC005295, AC006459, AC005323, AC002531, AC006367, AC004808, AC006443, AC007228, AI078584, D87009, AI02474, AC007016, AC002352, AC006552, U91325, AC006600, AC005609, Z99570, AI049569, AC005099, AC007298, AC004694, Z98751, Z68273, AC004552, AC007386, AP000506, AC005058, AC004950, AC004384, AF191071, AI033381, AC004228, AC008928, AI117356, AF123462, AB000852, AC004831, AI109865, AC007240, AC0066013, AC003003, AF003528, AI035089, AC005836, Z97054, AI049760, AC006379, AI022165, AC005725, AC002070, AC006450, AF031076, AC004072, AI133321, AF031075, AI117258, U96629, AF139813, AI135879, AI121790, AF064858, U91321, Z98884, AI031595, AC005304, AC005017,				
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HEONU75	2147	851054	1 - 215	15 - 229	AC003969, AC005293, AF031078, AL031311, AF000330, AL033397, AF030876, AC005831, AC007225, AC006088, AF207530, AL034384, AC005531, AC008040, AC000085, AC007371, AL022318, AC007284, AC003013, AC005229, AF000704, Z84487, AC004973, AC005066, AC002094, AL035005, AC018633, AC003077, Z86090, AL031321, AC004773, AC003035, AL049834, AC005091, AC007488, AC005028, AC009294, AF126403, AC004815, AB003151, AC006059, AC006948, AF000500, AC007637, AC012384, AC004087, AC005971, AL035691, AC006387, AL078638, AC004941, AL031123, AF045555, and AL031678.
HEONV39	2148	949152	1 - 376	15 - 390	
HEONV15	2149	575812	1 - 393	15 - 393	
HEONX19	2150	668740	1 - 363	15 - 377	
HEONX49	2151	485897	1 - 480	15 - 494	
HEO0B36	2152	830013	1 - 363	15 - 377	
HEO0D03	2153	923505	1 - 502	15 - 516	AA282391, AA282047, AA281587, AA748355, AA721283, and Z83847
					AA404360, AW148964, AL290157, AA004125, AI433952, AA569565, T94858, AA601376, AI224583, AA428270, AA255832, AA385570, AW006124, AA831350, AA811673, AI133355, AA927531, AL026896, AA484699, AA018488, AA174108, AH57605, AA669458, AW419201, N76712, AI889236, AA491941, AI254463, N71264, AI252005, AA533977, AW403177, AA493464, AI097211, AI254267, AW088928, AA666172, T73227, AL044758, AA533066, AA225645, AA947997, AA533600, AI869406, AA493546, AA516061, AI572680, AI744890, AA130350, AI926104, AI125192, AL044966, AA109578, T09181, AW179889, R07303, AI271873, AI912307, AI610814, AL079508, AA359725, T07954, AA165504, AA484321, L78833, AC005484, AC006597, AC005182, AC004771, Z95704, AL049636, AC005099, AA779599, AI978902, AF000563, AF000211, AF000133, AC003041, AB003151, AC005280, AL022318, AL109627, AC005132, AC005562, AC005839, AL031311, AC006511, U91321, AC005632, AC004150, AF000213, AF004861, AC006026, AF000135, AC003072, AC004913, AL049869, AC007546, AC000052, AF000031, AL031846, Z84476, AC007030, Z98949, AC002310, AL096701, AF165926, AC006211, AL031282, AF111169, U91327, Z84474, AC004542, AL035696, AC004876, Z86090, Z83844, AC004967, AC002471, AC007421, Z83840, AL035587, AL034343, AC020663, AC003533, AC005209, AC005037, Z93241, AC007666, Z97054, AL109623, AC004983, AC006166, AL031662, AL078639, AC007226, AL031730, AC009516, AC005971, AC008372, AC005291, AC007277, AC007686, AC005014, AC004895, AC007207, AC004019, AC005529, AF207550, AC002376, AC008120, AL109691, AC002351, AC003950, AC005049, AC007055, AC008044, AC005089, AF000354, AL139054, AC003779, AF000692, Z13025, AC004797, AC006162, AC005399, AC007364, AC003982, AC005694, Z93017, AC004882, AB023051, AF000116, AC002350, AL033392, Z98941, AC004084, U91326, AC005358, AC006088, AC007263, AC004765, AL050341, AL035413, AF000689, AC004910, Z95703, AL034402, AL117337, AC005519, AC008134, AC004890, AL078581, AC003006.

HEOP050	2154	738991	1 - 397	15 - 411	AC006960, AF118808, AF196779, AC005618, AP000114, AP000046, Z98051, AC006277, AL008725, Y18000, AC006285, AL113448, AC007204, AC004447, Z82171, AC008067, AC003030, AC003369, AL024509, AL031281, AC007919, AC003969, AL080243, AC004653, AF045555, AC003458, AP000030, Z82206, AC005531, D83253, AP000099, AL035660, AP000008, AP000512, AL034417, Z82190, AC002996, AC005730, AL008582, AC004859, AL031591, AC004878, U91323, AC006449, AL133445, AL121603, Z81369, AC005736, AC006312, AC005625, AC006509, AL121578, AL031432, AL122020, AP000036, AP000253, AL031666, AL049759, AL031427, AC003007, AC005755, AL003147, AC006581, and AC006396.
HEOPV40	2155	710800	1 - 357	15 - 371	
HEOP28	2156	926837	1 - 589	15 - 603	AA286964, A1568687, A1680899, AA809497, AA746098, AA287967, AW452688, AA814524, AL078634, AP000117, AP000194, AP000133, and AP000050.
HEOP58	2157	851009	1 - 463	15 - 477	AW130037, and AB028989
HEOP03	2158	839868	1 - 530	15 - 544	AC004954.
HEOP18	2159	918405	1 - 407	15 - 421	
HEOP25	2160	934171	1 - 510	15 - 524	
HEOP33	2161	969695	1 - 406	15 - 420	AA810065, AW205048, and AC003959
HEOP56	2162	850925	1 - 687	15 - 701	U81102, AP000325, AP000054, AP000122, and AP000169.
HEOP301	2163	915047	1 - 476	15 - 490	AL031667.
HEOP69	2164	883161	1 - 580	15 - 594	
HEOP73	2165	850936	1 - 597	15 - 611	AL121760.
HEOP141	2166	855634	1 - 536	15 - 550	N91672, AC008122, AP000558, AC009516, U91318, AB020864, AP000555, AF003626, AP000501, AL049779, AP000553, and AL031984.
HEOPK43	2167	930442	1 - 649	15 - 663	
HEOPK47	2168	966327	1 - 699	15 - 713	
HEOPK52	2169	883170	1 - 475	15 - 489	AC006987.
HEOPK90	2170	850883	1 - 624	15 - 638	AC005913.
HEOPN73	2171	851002	1 - 504	15 - 518	
HEOPN78	2172	918205	1 - 314	15 - 328	
HEOPN95	2173	973440	1 - 732	15 - 746	Z99396, AW392670, AW372827, AW384394, AW363220, AL119355, AL119457, AL119319, AL119483, AL119324, AL119443, U86341, AL119484, AL119391, U86349, AL119522, AL119503, U86350, AL036418, AL038837, U86351, AL119341, AL119335, AL119418, AL037051, AL036725, AA631969, AL119396, AL119496, AL036858, AL037205, U86347, AL119444, AL043029, AL042984, AL119439, AL119401, U86346, AL042614, AL039074, AL036924, AL142132, AL1134525, AL134538, AL042544, AL142137, AL042965, AL042975, AL119399, AL1134536, U86345, AL043019, AL043039, AL043033.

HEOP008	2174	938184	1 - 422	15 - 436	AL042551, AL038509, AL119644, AL042450, AL043011, AL042542, AL037094, AL037085, AL037526, AL036196, AL043003, AL036268, AL037639, AL036190, AL037082, AL038520, AL036767, AL037077, AL036774, AL036998, AL038851, AL038447, AL036238, AL036733, AL036719, AL037178, AL037027, AL037615, AL036679, AL036765, AL036191, AR066494, AR060234, AR1671, AR023813, AR064707, AR054110, AR026436, and AR0699079
HEOP030	2175	850916	1 - 418	15 - 432	R03882, R99079, AA846981, N70425, A1271762, AA563770, AC007225, AC004019, AC006121, AC000652, AL031427, AC007279, AP006690, U05740, U71167, U90994, AC006071, AL040569, Z77852, AP000151, AC005484, AC005014, AC008154, AC005539, AC002565, AC002314, AC003665, U00017, AC004084, AC007993, AC007731, AL008718, AC005500, AC004491, AF001550, AC005081, AC005932, AC000159, AC004851, AF005588, AF196969, AP000513, AC006084, AC005535, AC005844, AL049793, AC004851, AF005588, AF196969, AP000513, AC006084, AL133244, AB023049, AF196970, AC006146, AP000115, AC004820, L78833, AC005295, AC006649, AC004686, AL031846, AF196970, AC005046, Z99716, AC006111, AL031255, AF042484, AC007226, AC006487, AF045555, AC005829, AC004910, Z85996, AC005920, AC003101, AC005921, AC002059, AC005852, AC005412, AP006694, AC005049, AP006889, AL109753, AC005527, AC004900, AC004797, and AC004999
HEOP006	2176	934147	1 - 637	15 - 651	AA631942, AL086196, AC005590, AC004224, AL022330, AL096678, AC004032, AC004645, and AC006237
HEOPW04	2177	850948	1 - 721	15 - 735	AC005189
HEOPW38	2178	926764	1 - 520	15 - 534	AL889579, AL160786, F35684, AL355246, AW010994, AA736485, AA805014, T50676, H69992, AA837771, AA256107, AA077619, H60313, AW020198, AW373604, R67701, T83057, AA668905, AW247338, F19643, T62078, AA600132, AA634242, AA487226, AP15081, AA214457, AA354324, Z92546, AP000353, Z95979, AC004882, AC005529, AP000115, AC002077, AP000086, AC006211, AC006120, AC005018, AL009182, AC005620, AL0090429, AC006084, U62317, AC004820, AC007225, AC006530, AC004701, AC005881, AC004815, AL031595, AL031984, AC005519, AC005094, AC004663, Z82179, AC002988, AC005255, AL121603, AC004859, AL035405, AC005559, U47924, AC005740, AL035086, AC003692, AP003312, AP000193, AP000050, AP000117, AF001549, U52111, AL035703, AC0050412, U91321, AL121658, AC004659, AL031587, Z98946, AC007388, AC006111, AC004762, AL049553, AC005031, AC000079, AL109963, AL022398, Z84487, AC000068, AL022334, AL008635, AC005532, AC006011, AC005046, AP000510, AC007057, U62291, AC005057, AF196972, AC005666, AL109827, AC007308, U80017, AC002470, AC005293, AP000688, AB026899, Z93244, AC007425, AC004216, U95743, AC005257, AF047825, AP005488, AC004675, AF207550, U89335, AL049434, Z98051, AP000221, AP000085, AL009795,
HEOPW67	2179	840050	1 - 542	15 - 556	
HEOPX85	2180	855625	1 - 200	15 - 214	



HEOPY05	2181	9184.38	1 - 494	15 - 508	AL049570, AC002477, AC004655, AL049823, AL031283, AF088219, AF024533, AC005534, AC005514, AC003678, AL031293, AC006346, AC003663, AC003689, AC007993, AC0053071, AC007773, AC005261, AL109798, AC005082, AL049631, AC004042, Z99755, AC005089, AC005495, AC010170, AC006347, AC004217, AL022721, AC002314, AL034553, Z98941, AC005088, AL000092, AP000500, AC004819, Z97630, AC007200, AB020861, AC007435, AL121973, AL109865, L29766, AL049872, AC005624, AF001551, AL008707, AC0005206, AC005667, AL035420, AC005152, AC008101, AC004999, AC006254, AL035422, AL008628, AC005510, AC008079, AL133246, AC005618, AC005696, AE217403, AE037338, AC007292, AP000691, AL049576, AC003665, AC003002, AC002316, AP000113, AP000045, AC004910, AC000599, Z95516, AL031230, Z82214, AC004943, AC005411, AC006581, AC007685, AC007666, AL049539, AC005070, AP000329, AC011781, Z93930, AP000123, AP000170, AP000555, AC000134, AP000501, AL031577, AF053356, AL135744, D91323, AC004703, AC002091, AC005034, AC004000, L78810, AC004049, AL109616, AC004851, Z99916, AL031677, AL031846, AL022326, AC005015, AL034429, AC006449, AL049843, AP000553, AC002350, X06292, AJ13757, AC003004, AC004644, AC005179, AP000255, and AC004752.
HEOPZ02	2182	918407	1 - 493	15 - 507	AW92670, AW63220, AL02614, AW372827, AW384194, AL119444, Z99396, AL119443, AL119341, AL119319, AL119457, AL119497, AL119324, AL119483, AL037205, U46351, AL119355, U46349, AL119484, AL119363, AL119391, AL119418, AL119335, U46350, U46347, AL134524, AL134902, AL042978, AL119396, U46346, AL119522, U46341, AL042965, AL042975, AL042984, AL119401, AL134525, AL119496, AL119439, AL142132, AL043019, AL134920, AL119399, AL042433, U46345, AL042896, AL042450, AL043029, AL134536, AL134538, AL047544, AL042970, AL142131, AL042542, AL042551, AL119464, AL043003, AL119488, Z99572, AR066494, A81671, AR060234, AR054110, AB026436, AR069079, and AR043113.
HEOPZ05	2183	928257	1 - 166	15 - 180	AW090604, and L01057.
HEOPZ11	2184	965970	1 - 462	15 - 476	
HEOPZ29	2185	878503	1 - 381	15 - 395	AA347231
HEOOCB3	2186	909899	1 - 658	15 - 672	AA280922, AA090210, AL204291, AW148627, AA709639, and D29642
HEOQC10	2187	963398	1 - 386	15 - 400	AA837771, AA573000, AA768179, AA635433, AA093165, AA669248, D51877, AA385775, AA302660, AW419389, AA515172, AA3527109, AA568314, T07285, A5121042, T17135, AA078137, AL240606, AL078184, AA714073, H85587, AA610374, AA668148, AL244985, AA734968, Ro1195, AA720582, AL743129, AA832124, AA371410, H27788, AW089950, AA662629, R87135, A1572680, AL223968, AA348271, AW105463, AL044793, AW341882, AL653783, A1761566, AA078509, AA658853, W39287, AP000115, AC004859, AL031781, AC005071, AL031133, AC005037, AC005004, AF001549, AC005722, AP000355, AL133445, AL021391, AF047825, AL031985, AC004587, AC005300, AC005193, AP000212, AP000134,

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HECO0G73	2192	958109	1 - 584	15 - 598	R95051, AA491864, AF145457, AC004770, AC004228, AC002470, AC005350, AL031670, AF053356, AC000092, AC005527, Z85986, AC000134, AC005529, AP000555, AP000885, AL034429, AC004530, and AL008709.
HECO0H380 HECO0H81	2193 2194	850071 934100	1 - 448 1 - 597	15 - 462 15 - 611	AF068365, AL132777, AL031651, AF111168, AC002115, AC002381, and Z68323. AA708108, AA504896, AA811208, AL150941, AA486226, AC004883, AC005529, AC005015, AC005527, AC002470, AC002375, AC004895, AC005971, AC004598, AL031286, AC007537, AC000025, U82671, AC007216, AF001549, AL009181, AL035458, AC005081, AC002316, AC004974, Z69917, AP000298, AC005690, AC005277, AL078587, AL109627, AC005538, AC004531, AF039007, AL031668, AC000134, AP000701, AL049757, Z82182, AC005524, AC005011, AL049869, AC006017, AP000354, AC003684, AL008718, AC009516, U78027, AP000044, AP000112, AL021368, AL035413, AL031311, AL035422, AL031295, AC005377, AP001428, AC009731, AC004858, and AC007308.
HECO0I11	2195	965973	1 - 587	15 - 601	AA533768, AL820985, AA620562, AL720732, AW004354, AA088727, AW082470, AA984114, AL150906, AW083604, AC006036, AC005548, AC005972, AL031662, AC004185, AP000509, AC004024, AF071704, AF141309, AP000563, AL049845, AP000210, AP000132, AC004522, AF129756, AC008009, AC006211, AC000062, M64231, AP000348, AC006504, AL050432, AC002477, AC004087, Z74739, AL023494, AC007684, AC003043, Y14768, AC004874, AP000505, D84394, AF165926, AC007102, AC008063, AC007639, AC004491, AC004887, AF196972, AC004253, AC005484, AC004787, AC016831, AP000503, AL133312, AF134726, AL035667, and AL121653.
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HE00K72	2198	847285	1 - 147	15 - 161	<p> AL119483, AL119443, U66349, AL119444, AL134525, AL134526, AL134527, AL134531, AL134536, AL134538, U66341, AL037205, AL134902, AL134518, AL119496, AL119335, AL119401, AL119418, AL042544, U66346, AL412137, AL142132, AL119399, U46345, AL043019, AL031666, AR066494, AR060234, A81671, AR069079, AR026436, AR054110, and AR043113  AL045891, AL150012, AL134524, AL040889, AL045327, AL043321, AL042488, AL042655, AL046356, AL432644, AL047163, AL431107, AL047611, AL042898, AL042515, AL045328, AL041862, AL042508, AL431316, AL432666, AL042853, AL042729, AL042931, AL040207, AL042787, AL043091, AL043529, AL431238, AL047675, AL042533, AL042533, AL060786, U46344, AL060946, AW151136, AL153977, AL153767, AL049201, AL1500659, AL060465, AL815232, AL801325, AL1500523, AL1538850, AL887775, AL1582932, AL025989, AL284517, AL872423, AL1500043, AL648567, AL1500706, AL445237, AL491776, AW151138, AL1521560, AL89189, AL1500662, AL1582912, AL284509, AW177223, AL1539800, AL440263, AL889168, AL1538885, AL866573, AL633493, AL434256, AL866469, AL805769, AL434242, AL888661, AL284513, AL1500714, AL888118, AL285439, AL436429, AL859991, AL889147, AL155779, AL023736, AL1371228, AL1581033, AL440252, AL491710, AL610557, AL860003, AL242736, AL828574, AL887499, AL159781, AL440275, AL02065, AL885949, AL042420, AW089557, AL1559957, AL1521571, AL042802, AL460775, AL866581, AL815150, AL1567953, AL464695, AL431157, AL047092, AL090907, AL561170, AL027233, AL432656, AL043166, AW151979, AL042745, AL285419, AL1554821, AL042741, AL432653, AL431323, AL431321, AL131315, AL1371251, AL039390, AL866510, AW081103, AL289791, AL866461, AL923046, AL690948, AL045626, AL047037, AL042523, AL1521596, AL440238, AL046681, AL049581, AL1539863, AL079977, AL166900, AL866820, AW197139, AL023061, AL275175, AL045500, AL042551, AL1582926, AW058275, AL1599463, AL610362, AL119748, AL434222, AL440239, AL042744, AL274759, AL1537273, AL436456, AL171265, AL963846, AL567940, AL610357, AL817244, AL612913, AL285826, AL63014, AL155765, AL1521594, AL499512, AL433976, AL042365, AL889133, AL1538881, AL048403, AL288281, AL039276, AL282268, AW087954, AL155017, AL434255, AL047422, AL043278, AL434223, AL285432, AL697243, AL671642, AL610429, AL628850, AL431968, AL476086, AL1337187, AL431355, AL042944, AL045163, AL1539632, AL889148, AW118237, AL439995, AL1539847, AL1521465, AL828583, AL042538, AL872300, AL1554827, AL863357, AW172745, AL1534998, AL863197, AL567944, AL042865, AL567935, AL805762, AL610426, AL043295, AL867008, AW080700, AL046990, AL1555008, AL432446, AL271234, AL042572, AL610402, AL1567971, AL042377, AL042557, AL1538878, AL888665, AL432654, AL166910, AL049859, AL432650, AL866457, AL499555, AL042842, AL567954, AL1537191, AL866491, AL654276, AL567993, AL499915, AL499508, AL817373, AL872315, AL048390, AL273179, AL284515, AL031667, AL133053, AL122101, AL133049, AL133074, AL133076, Y10655, AL137287, AL122049, AL85203, AR034821, Y17793, AF113694, AL049423, </p>
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HEOQJN83	2199	850964	1 - 588	15 - 602	AA341080, AW240930, AW392934, AA773513, AA176554, W03722, AL1597867, AC006252, Y17169, and AL136773
HEOQJN83	2200	934202	1 - 759	15 - 773	AA774831
HEOQJN83	2201	864110	1 - 211	15 - 225	AA680243, AL732120, AA433558, AW406162, AA938105, AA679936, T40452, AA601908, AA806796, AA205915, AA774222, AL121235, AA347241, AL046457, D82290, AA496508, D82542, AA836811, AL048125, AL110760, AP24251, AA524821, AA309841, AL079869, AA533303, R70821, AL799545, N23649, T74382, AL093030, AL133297, AA508359, AA483223, AL038990, AW075511, H71429, AA722372, AL816537, AA747777, AW245747, AA846952, T07249, AL036037, AW438555, AL284640, AA587604, AA605272, AW248847, AA502104, AL754955, AA580808, AL270117, AW023900, AA584167, N27329, AA702729, AA632868, AA496260, AA652037, AA324849, AA837655, AL274692, AA613232, AW303196, AW274349, AL038705, AA224525, AA214342, AW301350, AA992351, AL583283, AL334443, AW419262, AL370074, AA503015, AL041706, AL431303, AW193265, AL046205, AL041690, AL350211, AW072923, AA584581, AL197740, AW302013, AL631119, AA178953, AA810269, AL744826, AA634889, AA613227, AA632612, AA727072, AW128900, AW128884, AW088224, AL046409, AL370094, AL364020, C06151, AA613203, AL364026, AA658362, AA834713, AL218181, AA614070, AA828712, AA568341, AW301302, AL572924, AW088058, AW021583, AA526787, R95139, AA018412, AL049400, AL699938, AA493621, AA508862, AL819574, AA847499, AL473475, AA478355, AW438643, AW276435, AL432270, AL019265, AA834755, AA400183, AW022406, AA513136, AL537506, AL053672, AW274346, AW245325, AA493136, AA847952, AA515440, AW270382, AL049604, AA804962, AW410400, AA367986, AA483771, AA636954, AA366312, AL196919, AW021207, T11247, AP001038, U07562, AC002301, AC004690, Z98036, AF109907, AF196779, AL023494, AC005324, AL049776, AC009516, AC007686, AL035587, AL031846, AC004858, AC005406, AF088219, AC007298, AL022476, AC004834, AC005274, D87675, AC006359, AP000352, AL050321, AL034420, AC005231, AC008072, AC005274, AL096769, AP000088, AC004675, AP000240, Z86090, AC004517, AL035681, Z98884, AP000553, AL008718, AC002365, AC003085, AC005275, AL117258, AC000358, AC006285, AC007136, AL022329, U96629, AC007051, AC000353, AC000965, AC004671, AC005763, AC006486, Z92845, AC008372, AL020995, AC007955, AC002418, AC007688, AC004848, AC004386, AL031584, AC007283, AL049829, AL049832, AC004019, AC003035, AC002119, AC007041, AC005907, AL122020, AL034548, AC006275, AL121603, AC000052, AC009069,
HEOQJN83	2202	850957	1 - 454	15 - 468	

HEO0P44	2203	942596	1 - 1810	15 - 1824	<p>AL035072, U07000, AP000090, AC005778, Z85987, AC005531, AC005529, U91326, AC0006312, AL096775, AF165926, AC006213, AC005259, AC005558, AC005740, AP000354, AC010200, AL022302, AL109618, AC005257, AL021154, AL035458, AP000513, AL049869, AC005994, AF227510, AC006241, AC005839, AL133382, AP000017, AC005913, AC005787, Z84488, AP000459, AL135744, AL033525, AC005291, AC004381, AC004150, Z69606, AC007666, AC004638, Z92542, AL033525, AC005291, AC004381, AC004150, Z69606, AC007666, AC006111, AC006548, AL121591, AL022163, AC005332, AC007537, AC005914, AP000692, Z84721, AL031447, AC005694, AC004815, AL035459, AL023384, AP000044, AP001112, AC006195, AC004975, AL009758, AC005242, AC005696, AC004616, AL008583, AC005900, AL035450, AP000065, AL034371, AC004016, AC005081, AC005527, AC006207, AC006210, AC005399, AC004626, AC002395, AL139054, AC007066, AL031719, AC006017, AC006210, AC006511, AL050308, AP000961, AC004827, AC004987, AC007387, AF064861, AL021940, AL022240, AC002991, AL109941, Y10196, AL080243, AC002429, AC002312, AC018633, AC005924, AC007227, AL133485, AP005552, AC007226, AC007314, AL132994, Z82208, AC00379, AC006251, AL118497, Z98745, AC004033, AC004686, AL049569, AC009247, AC005331, Z97053, AC004079, AC006374, Z49237, AC003950, AC007214, AC005019, AC005519, Z83844, AL133448, AC005747, U78027, AL096712, AB020858, AC007652, AL049653, AL049843, AC012627, AC010072, U85195, AC003108, AC004544, AC006211, AF027550, AL023575, AC003665, AP000517, AC005501, AC007245, AL132992, AL021878, AC006115, AC004821, U63630, AL009179, AC003899, AL031685, AL024507, AC005089, AC005821, AC004099, AC005225, AC000003, AL035460, AC004593, Z98051, Z97054, AC003065, AC005565, AC005785, and AC005180</p> <p>AL042026, AL040542, AL042640, AL042540, AL046135, AL041808, AL044178, AL044364, AL043613, AL044413, AL043840, AL042334, AL043585, AL044583, AL044354, AL041936, AL039459, AL039576, AL040947, AL046244, AL043201, AL043604, AL039472, AL046383, AL043218, AL039689, AL040045, AL044350, AL039550, AL043425, AL042346, AL041424, D11960, AL045991, AL079876, AW450335, AL044377, AL042700, AL043468, AW297822, AL043795, AL546832, AL041128, AL040029, AL042245, AL044771, AL042712, AL036650, AL043867, AL040007, AL036630, N84802, T23658, AL035924, AL040697, AL040414, AL044412, AL040571, AL046994, AR035193, AL13393, A49045, A85522, A38523, A58524, A38525, A64973, A82653, A83151, A83642, A83643, A84772, A84773, A84774, A84775, A84776, A86792, A93963, A93964, A95052, AR017907, AR027100, AR067731, AR066732, E12615, E16636, E28266, I44516, AL17115, A18079, A27396, A98767, AR028504, I63120, AO2710, AO2712, AO7700, A13392, A22413, A23509, AG0955, A68104, A68112, A76773, A91750, A93016, AR009151, AR009152, AR037157, AG054109, E14304, E16678, I19516, I21869, AR068550, AR068551, AO2228, A13388, A18050, A18053, A23334, A23633, A23998, A24782, A24783, A38214, A44171, A48774, A48775, A49700, A58521, A58998, A60111,</p>
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HEOOW56	2207	883227	1 - 212	15 - 226	AW 3403464, and AF127389.
HEOOW81	2208	887147	1 - 1046	15 - 1060	
HEOORC12	2209	969585	1 - 432	15 - 446	
HEOORC48	2210	922885	1 - 800	15 - 814	
HEORE11	2211	965904	1 - 746	15 - 760	
					T91937, T99157, T96469, AW082364, AL268419, AL1690257, and AR007861.
					R93208, Z99396, AW992670, AL036418, AL038837, AW372827, AW384394, AL037051, AL036725, AL119497, AL119319, AW363220, AL119457, AA631969, AL119324, AL119483, AL119484, AL119391, AL119443, U46350, AL119522, AL119363, AL038509, U46351, AL036858, U46341, AL119355, AL039074, AL119418, U46349, AL119341, AL119335, AL036924, AL119496, AL119396, U46347, AL119399, AL119444, AL037205, AL119439, AL042965, AL037639, AL134531, AL039564, AL134538, AL039085, AL037094, AL119401, AL039156, AL037082, AL039108, U46346, AL039109, AL037526, AL039128, AL036196, AL134533, AL134536, AL042614, AL043029, AL042975, AL042544, AL042984, AL037615, AL036767, AL134532, AL038447, U46345, AL037085, AL036190, AL042542, AL043019, AL037077, AL042551, AL038851, AL038531, AL043011, AL036268, AL042450, AL038520, AL043003, AL036998, AL036238, AL036733, AL037178, AL119464, AL036774, AL037021, AL036836, AL037027, AL036765, AL036719, AL036191, AL036679, AL036158, AL036886, AR066494, AR060234, AS16171, AR023813, AR064707, AR069079, and AR054110.
HEORE22	2212	969579	1 - 704	15 - 718	
HEORE27	2213	850902	1 - 636	15 - 650	
HEORE79	2214	959572	1 - 315	15 - 329	
HEORE12	2215	969580	1 - 530	15 - 544	Z99396, AW 392670, AW372827, AW384394, U46349, AL119483, AL119497, AW363220, AL119319, AL119355, AL119457, AL119434, U46341, AL119484, AL119363, AL119391, AL036418, AL038837, AL119341, U46350, AL119522, U46351, AL037051, AL036725, AA631969, AL119335, AL119396, AL042975, AL119496, AL036858, AL119418, U46347, AL119399, AL119444, AL134538, AL037205, AL039074, AL119439, U46340.

HEOR120	2216	934067	1 - 417	15 - 431	AL036024, AL042984, AL134902, AL038509, AL134920, AL042614, AL042965, AL043011, AL043029, AL042973, AL134527, AL134536, AL134531, AL134533, U46345, AL142134, AL037094, AL042551, AL037526, AL037085, AL036196, AL037082, AL042544, AL043019, AL043033, AL037639, AL134526, AL042450, AL042542, AL142139, AL037077, AL036774, AL036190, AL043003, AL036268, AL119464, AL038520, AL038851, AL038447, AL036774, AR060234, AL81671, AR066494, AR023813, and AR064707
HEOR120	2216	934067	1 - 417	15 - 431	AA640896, AA210943, H10636, W72442, AT99645, N27422, AA834765, AC007014, U63630, Z99774, AL031276, AL031384, AC002565, AC006449, AL023807, AL035413, AC007685, AL079342, AL031291, AL049539, AP004044, AC005045, AC005488, AC004674, AC002470, AL022721, AC007436, and AC000078
HEOR190	2217	918166	1 - 250	15 - 264	
HEORR01	2218	914988	1 - 202	15 - 216	
HEORM10	2219	963194	1 - 411	15 - 425	
HEORM21	2220	839142	1 - 422	15 - 436	
HEORR01	2221	915015	1 - 648	15 - 662	

HEORU06	2222	934097	1 - 494	15 - 508	AL0409830, AC006130, AC005839, AC005295, AF205588, AL031650, AC005231, AC005593, AL020997, AC007227, AC005175, AC008041, AL049757, AL096701, AC002310, AL049776, AC004797, AC006237, AC004167, U85195, AC005104, AF001549, AC005004, AC004671, AC006057, AC008134, AL022318, AL096791, AL031289, Z84469, AC005682, AC005379, AC005252, AC005919, AC005323, AC004185, AP001152, AC006088, AC004030, AD000812, AC005619, AL008710, AE000658, AC005081, AC007371, AL031662, AC005822, AC005829, AL022323, AC005250, AP000088, AC005291, AC006441, AC005220, AC002126, AF045555, AP000553, Z92542, AC004231, AC002544, AC006132, AF134726, AC0033043, AC004041, AC004883, AC004882, AL049761, AC005921, AC004859, AL022320, AC004517, AC002306, AL049712, Z82215, AP000019, AC008055, AC005288, U52112, AF042089, AC006249, Z94056, AL034549, U96629, AC005523, AL008726, AC005288, U52112, AF042089, AC005358, AL049653, AC005048, AC002347, AC004031, AL033527, Z93244, AC004024, AF195658, AF11169, AC000421, AP000962, AC003037, AL022315, AC005305, AC004975, AC006236, Z98048, AC002350, AL139054, AL096703, AC007011, AL121652, AC005516, AC005324, AC007114, AP000275, and AC006075.
HEORU06				15 - 508	AA282451, AL137996, Z99396, AW392670, AW384394, AW372827, AL119457, AL119396, AL119324, AL119341, AL036924, AL037094, AL037077, AL036196, AL037082, AL036767, AL036733, AL036191, AC004798, A81671, AR060234, and AR060494.
HEOSI66	2223	850917	1 - 523	15 - 537	
HEOSI50	2224	922825	1 - 199	15 - 213	
HEOSL01	2225	914874	1 - 537	15 - 551	
HEOSL08	2226	850951	1 - 971	15 - 985	R93538.
HEOSL54	2227	926849	1 - 639	15 - 653	AC007444.
HEOSN60	2228	841869	1 - 665	15 - 679	AC005393, and AC006133.
HEOS001	2229	855651	1 - 432	15 - 446	AC003663.
HEOSI05	2230	928270	1 - 680	15 - 694	AL134528, AL134518, AL119336, AW372827, AL119439, U46341, AL119319, AL134524, AL119496, AL02965, AL119484, AL042970, AL134902, AL119443, AL134920, AL134533, U46346, AL134538, AL119391, AL119444, AL042850, AL119396, AL119320, AL119304, A81671, and AR069079.
HEOSI06	2231	933991	1 - 536	15 - 550	AA278249, AA482174, AA282390, AA488762, AA489734, AW392670, U46349, AL119319, AW372827, AW363220, AW384394, Z99396, AL119483, AL119355, AL119363, AL119457, AL119324, AL119443, U46351, AL119484, AL119391, AL119341, AL119444, AL119497, U46346, U46350, U46341, U46347, AL119522, AL119335, AL119396, AL119439, AL037205, AL134518, AL042975, AL042984, AL134902, AL119418, U46345, AL102137, AL134538, AL119496, AL042614, AL119399, AL042965, AL119452, AL134527, AL134536, AL134528, AL134524, AL043029, AL142134, AL042544, AL043011, AL043019, AL043033, AL042550, AL042542, AL043003, AL119460, AL042551, AR060234, A81671, AR060494, AR054110, AB072636, and

HEOSR54	2232	855615	1-434	15-448	AR0609079.
HEOSR54	2233	926483	1-457	15-471	W65492, AC005393, AC006133, and AC005515.
HEOST23	2234	965916	1-753	15-767	W03011
HFSA03	2235	850146	1-552	15-566	AA341979, and T92688.
HFSA043	2236	715700	1-162	15-176	AA342419.
HFSAQ59	2237	572813	1-423	15-437	AA342556, and AC005158.
HFSAV59	2238	675922	1-264	15-278	AW020037, A1658843, AA342731, AA828039, A1400553, and A1010597.
HFSAV51	2239	572815	1-399	15-413	AA342635, and R37508.
HFSEB09	2240	573315	1-403	15-417	AA343192.
HFSDG31	2241	504368	1-306	15-320	AA343240, AA343241, and AC007688.
HHEAA27	2242	575258	1-489	15-503	A1537538, Z63822, AC006285, and AC016025.
HHEAM44	2243	726856	1-596	15-610	AA489589, AB025537, and AL031128.
HHEAW46	2244	718120	1-572	15-586	AW262813, AW411169, R68959, and A1380261.
HHEBS24	2245	858417	1-306	15-320	
HHECK11	2246	924982	1-223	15-237	
HHECK33	2247	871375	1-232	15-246	131887, and 131888.
HHECN01	2248	916178	1-429	15-443	AA586433, H81732, A1049701, H71738, AA878407, A1884861, A1002762, A021139, AA320105, AA515979, A1564301, A1699049, F07564, R93854, AA074351, AA598608, AA87812, A1004740, AA721198, A1255004, A1255015, F75640, AA814719, AA151808, A1143653, A1042869, A1063043, A4736713, A1808574, A1251576, A1106232, AA326904, AA729373, A1583466, F16409, A1279417, AA468923, A1869786, AA326452, AA545404, AA846923, A1805261, A1218969, AW274191, A1246192, AA809125, AA811954, A1733647, A1904944, A1914713, A1880889, A1733662, A1590404, AA324088, AA484892, A218631, A181823, A1865980, AA313133, AA326330, AA507526, A1282479, AA484892, A1904884, A1567391, AA584484, AW238712, A1289396, T49933, AA595656, AA492105, A1983047, N20173, AA374797, A1479968, F35097, W44359, AA720582, AW328331, AA503298, A1921491, AA405726, AA558404, AW166920, A1610737, AW128881, AA652059, AF003626, AF124730, AC002554, AC007193, AC006008, AC004973, AC005998, AC006530, AC005625, AF124730, AF165926, AP000066, AP000280, AC003964, Z95703, AC005697, AF024534, AF000039, AF000107, A1110502, Z73963, Z93023, Z98950, A1133494, AP000224, AC007055, AC005088, AF000113, AF053356, AC005003, Z84477, AC005412, A1049780, AC004236, AC009275, A1031277, AC006137, AC005237, A1133163, AC007680, AC007429, A1078581, AC009275, AP000314, AC004948, AP000194, A1331666, A1050308, AC007429, A1078581, AC009275, A132987, AC004782, AC005193, AC006130, Z82189, AC006538, AC004814, AP000153, AP000011, AC004020, AC002039, AC005839, A1049869, AB026899, A1031885, AC007536,

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HHEDJ631	2256	697806	1 - 589	15 - 603	166482, 166485, AR027319, A47368, 107249, 166483, 166484, A91752, E03813, 166498, 166497, 166496, A91751, 166487, 166486, 119516, A06419, A21892, 119517, AR027318, 108776, AR008429, A23997, AR83151, A68114, A95096, A63954, Y09813, A95106, A95105, AR027099, A63067, A51047, A63064, A21895, AR035975, AR035974, AR035977, AR035976, AR035978, A05160, A08030, A23052, AR003585, 163560, 163561, 163563, 125041, A76773, A22413, A1230935, 156772, 195540, A63072, A89633, A89634, A58521, AR021969, AR051652, AR051651, and X07299
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HHEDH57	2257	665762	1 - 655	15 - 669	W19045, N57242, N41553, and AC000119
HHEDJ94	2258	906876	1 - 509	15 - 523	R80434, AA531428, Z82215, and Z95114
HHEDM03	2259	923908	1 - 448	15 - 462	AA553409, A1762528, A167656, F16848, AA593168, A1925065, A1823705, H12857, A1824476, A16440368, N41775, F10650, W45416, AA93636, A1025930, W02497, AA828592, AW088631, AC005015, AC004859, AC004000, AC006271, A1133551, AC005288, AL008719, AP000552, A2027550, AC005940, AC005911, AC004821, A1031848, Z81364, AC004087, AC0029456, A1022163, A1035071, AC004686, AC005695, AC000025, AC005330, AC002565, AP000167, AP000536, AC003963, A1035089, AC005859, AP000502, AC005041, A1031230, A1315187, AC005696, A1049569, AC008372, A1047825, A134726, A8023059, AC007878, AC005612, AC005519, E78810, A1049869, AC002544, A1049694, A1035086, U80017, AC005484, AC006449, U73169, A1035387, A1050307, AC002347, A1049839, A1031311, AC002316, A1049780, A111167, A109952, Z93241, AC007226, AC004832, AC002350, A1050318, AC005203, AC006960, AP000122, AP000509, Z97056, AC007934, AC0010170, AC005531, A1034420, AC006111, U95742, A1031685, Z99716, Z8823, A1022316, AC005089, A1022326, AP000159, AC003025, AC002425, AC005362, AC007551, AC000159, Z85987, AC006285, A121578, AC004583, A1022345, AC006538, Z95152, AC007216, AC012627, Z83822, A139813, AP000326, A109798, AC005846, A1079340, AC005716, AC007897, U91321, AC007160, AC004999, AP000113, AP000045, AC007041, AP000169, AP000054, Z84484, A1023803, A1023553, A1049776, AP000300, AC004228, A1023807, AC005180, AC004520, AC005913, AC007536, AC005567, AC005527, AC0006121, AC005399, A1036405, AC005839, AC005529, AC007055, A1009181, and A1035422
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HHEDN93	2260	731067	1 - 360	15 - 374	AA975530, A1376755, AA931603, AA830053, AA912944, AA926705, A1445635, and AA954467
HHEDD53	2261	973320	1 - 59	15 - 73	
HHEDJ74	2262	463250	1 - 432	15 - 446	
HHEDP88	2263	878759	1 - 371	15 - 385	AA297299, A1900951, AA412438, A1A150262, AA937163, AA257561, N132544, A1126496, AA872939, and R61273

HHEDR27	2264	791847	1 - 563	15 - 577	U63127
HHEDW03	2265	923340	1 - 421	15 - 435	AL132712
HHEDW58	2266	735609	1 - 509	15 - 523	AW271777, AA418212, AW026172, AW080197, AW150080, Z99393, AW296033, A1738581, AA452203, AA418081, AA028164, AA035728, AW138718, AW027368, A1861850, A1493006, A198725, AA845357, AA521417, AA394270, AW003395, A196190, AA476994, A1815175, AA621780, AA292791, A1917710, A1580942, A1831206, A1422238, A1337202, A1084220, A158685, A1769662, A1363146, A195569, AA477022, AA149978, AH459301, A1916905, AA426479, A1900412, A133285, AA136594, AA477023, N26319, AA453007, W79139, N80051, W74404, N27382, W17034, A1536804, A1336594, H83596, A1524485, A1092161, A196349, AA160311, W07012, AA829164, AW192237, AA765990, A1803792, A1253581, A196349, AA160311, W07012, H96016, A1963237, A1915904, C16527, A1468579, AA379225, C16442, A1867613, T23879, AA918013, A1224581, A1224589, AA373431, AA639187, AW261888, AA894881, H43838, AA081258, AW088913, AW024050, D61727, H96017, AW160880, AW161522, AW161495, A1090929, N89775, Z99394, C71261, A1687157, A1620764, N19762, A1814820, AA354795, AA476912, A1624528, N79269, D25568, AF064257, D18517, and AC004222.
HHIEEC61	2268	741280	1 - 262	15 - 276	AF200630, AF201372, and AL022313
HHIEEK68	2269	702337	1 - 522	15 - 536	AL261872, A1679138, A1434461, A1379427, A1679712, A1963616, N98728, A1823643, A1769963, AA555094, AW294343, AA098469, A1341436, A1660067, AA070537, A1682850, C01626, AA401874, A1985926, R71022, AA772273, W31010, AA705992, A1862548, T26896, and AF085849
HHIEEL47	2270	719825	1 - 535	15 - 549	A1703409, AA404263, A1002734, A1054352, A1273847, A1580250, A1253382, AA502991, AA728812, AA811208, AA834707, AA594072, AA654661, AA452325, AA484143, A1674840, A1922930, A1205009, A1002941, AA862243, AA579205, AA747540, AA776646, A1627624, AA515728, AA486559, AA442176, AW084246, B81017, AA436796, AA297538, AA582463, E63210, A1079734, AA984187, AA448897, AC007055, A1049780, A1133500, AC004765, A1031685, AC004466, Z83340, AC004099, A1031177, A1049610, A1121825, AC004682, AC007103, AC004655, AC006312, AC006543, AC006367, AC006137, AC007387, AC006544, AC004984, AC006531, AC005669, A1031428, A1031283, A1023498, AC006166, AC007214, A1000337, Z81364, AC006115, A1008633, Z99716, Z93783, AC005722, AC006365, A1032051, AC007225, AC006978, A1035420, AC003037, A1000961, AC007193, A1000512, A1031662, AC007842, A1011889, A1023048, A1034425, A1000511, Z97054, AC005190, A1034420, AC004217, Z84469, AC004552, U91322, A1035495, U91327, AC005146, AC002080, A1035525, A1000704, A1133445, AC003043, A1035697, AC005696, AC0050513, AC009743, Z97630, A121769, A1229941, U07563, AC008154, AC004605, AC005452, AC005582, A1009182, AC004685, AC007285, A1001052, A1133163, A1009174, AC005065, AC005212, U78027, AC007090, AC006271, AC003950, AC005701, AC005937, AC007707, AC007226, AC006538,



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HHEFB29	2271	690073	1 - 532	15 - 546
HHEFB73	2272	947568	1 - 432	15 - 446
				AL039087, AL037259, AA362688, AA362689, T29199, AA362690, AA49045, 107209, AR067734, 107249, AR068508, AR068510, AR068509, A63954, 109267, 109270, 109268, 109269, A49701, 109252, 109251, A29109, A32111, AR068550, A23373, AR068551, A94048, A94061, AR035224, A94046, A94094, 158322, 158323, E01324, 108638, A27169, A27170, A27171, A39929, A83151, AR038307, AR038321, AR016495, 166495, 166496, 166497, 166498, 166499, 166496, 166487, A93936, 191969, Z96177, E01619, E01239, E01561, A92081, A92080, A92077, AR067733, AR038306, AR029418, A92078, A92079, AR029417, AR038320, AR027319, A91752, A91751, A70359, AR067731, AR027318, AR054109, AR067732, AR038066, AR064436, AR051651, and AR051652.
HHEFK12	2273	966292	1 - 317	15 - 331
HHEFL47	2274	973094	1 - 356	15 - 370
HHEFLZ58	2275	735615	1 - 366	15 - 380
HHEGA66	2276	969467	1 - 247	15 - 261
HHEHC74	2277	974406	1 - 725	15 - 739
HHEHD94	2278	964103	1 - 306	15 - 320
HHEHU73	2279	923895	1 - 432	15 - 446
HHEHW78	2280	973140	1 - 579	15 - 593
HHEHJ19	2281	973230	1 - 512	15 - 526
HHEHJ30	2282	961974	1 - 536	15 - 550
				AW277207, AW157157, A818300, AW277157, AW156950, A4313026, A4152106, A313177, AW163128, AW161415, A382940, A201561, A773272, A382940, A262630, A267630, AW081919, AA731178, AA017675, AW390380, A1222064, AW390751, AF180920, AF159159, and AF000091.
HHEIY91	2283	974407	1 - 521	15 - 535

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HHEKG10	2284	961957	1 - 399	15 - 413	
HHEKJ20	2285	918032	1 - 214	15 - 228	
HHEKI27	2286	858384	1 - 478	15 - 492	
HHEKK06	2287	913380	1 - 459	15 - 473	
HHEKP61	2288	913413	1 - 1448	15 - 1462	
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HHEKS53	2289	973233	1 - 449	15 - 463	AC338228, AA599423, AL289850, AL275183, AA584125, AF583291, AS171543, AL031293, AC005307, AL109758, AF111168, AL004402, AC005183, AC005348, AC005790, AC005229, AF134776, Z97630, AL049836, AL022316, AC004024, AC006487, AC016027, AP000503, AC016830, AP009667, Z83838, AL031228, AC005821, Z98743, AC005839, AF064860, AC004820, AC005291, AC005363, AL096706, AC004865, AC007324, AC007917, AC008101, AC004079, Z84483, AC008079, AF111167, AL021154, AP000098, AL034423, AL031311, AC005318, AC004000, AL023212, AD001502, AC005482, AC005599, AL022726, AC004020, AC007237, AL049764, AL0311053, AL121754, AP000355, AC004805, and AC006536.
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					H66688
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					AL230802
					AL109748, and AL078614.

HHENR18	2300	666335	1 - 412	15 - 426	AL109827.
HHEND28	2301	468911	1 - 500	15 - 514	
HHEND45	2302	919630	1 - 338	15 - 352	AC002390
HHENE18	2303	806606	1 - 500	15 - 514	
HHENE38	2304	662972	1 - 432	15 - 446	AC004385.
HHENE47	2305	720255	1 - 382	15 - 396	AL266255, AL302710, AA505091, A0767214, H82739, N30416, AA758853, H83614, AL362648, N79746, T77931, A0013896, T77853, and AL031291.
HHENR11	2306	917904	1 - 622	15 - 636	AA395183, H29208, H29209, and AF102777.
HHENR19	2307	691023	1 - 377	15 - 391	
HHENR23	2308	709078	1 - 289	15 - 303	
HHENR26	2309	661841	1 - 547	15 - 561	
HHENR11	2310	966906	1 - 936	15 - 950	
HHENR78	2311	773537	1 - 417	15 - 431	AW007450, AW021951, R56093, A1809818, AF118885, AC002468, AL109627, AC005004, AC005562, AC008273, AC005082, AL034555, AC004815, L04140, AC006023, AL133243, AC018633, AC006538, AL132712, AL080243, AC005839, AC007660, AC007041, AC006137, AL031983, AC007546, U85195, AC005703, AL132857, AC005488, AL009179, AC005363, AC005104, AC004019, AP000704, AC007738, AC005252, AL031595, AL008582, AC006077, AF043945, U07563, AL109963, AC007182, AP000295, AC006049, and AC008041
HHENR78	2311	773537	1 - 417	15 - 431	AC005326, and AC004924
HHENV38	2312	657383	1 - 401	15 - 415	AL900739, A1927951, A1989475, A1990284, A1082831, AW295986, A1798629, A1380475, AA777280, AL150438, A1867928, AW194833, A1478440, and A1758120.
HHENR26	2313	670837	1 - 436	15 - 450	
HHEOF20	2314	861457	1 - 347	15 - 361	To3737, and AC004755.
HHEOF58	2315	841978	1 - 483	15 - 497	
HHEOG17	2316	662948	1 - 342	15 - 356	
HHEOG67	2317	588154	1 - 326	15 - 340	
HHEO118	2318	677891	1 - 381	15 - 395	AA976063, A1680977, A1291003, A1796262, AA889834, AA147542, AA383327, A1857560, AA234045, R81076, A1924779, AA826483, A1368773, AA190557, A1680857, A1041119, A1703295, A1802472, AA349132, R25344, R23959, A1360000, W60453, A1557581, and AF048977.
HHEO110	2319	911814	1 - 450	15 - 464	AW385142, AW175056, AW062951, W19655, and AA452790.
HHEO159	2320	588168	1 - 519	15 - 533	
HHEOX60	2321	734311	1 - 400	15 - 414	
HHEO217	2322	793087	1 - 393	15 - 407	
HHED146	2323	718950	1 - 550	15 - 564	A1653678, T60029, NS8301, AW162128, A1859744, A1273990, N73203, AA506744, R85174, AA366676, A1879951, AA653291, R32162, AW166824, A1018726, R93026, AA811150, AA577719, M77867, AA744993, H78281, AW189401, AA737523, AA642823, AA632565,

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HHEPD73	2324	966828	1 - 548	15 - 562	AW102944
HHEPF31	2325	858269	1 - 355	15 - 369	
HHEPG15	2326	659664	1 - 548	15 - 562	AF150253, AF143143, X85654, and AF161548.
HHEPK28	2327	686489	1 - 342	15 - 356	
HHEPN473	2328	683270	1 - 414	15 - 428	AA505298
HHEPN44	2329	716494	1 - 928	15 - 942	R10189, AF1984168, AA583386, AW020198, AL047667, AL042670, A1917132, A1003469, A1915081, A1310670, AA324108, AW247338, A1612070, AA614254, A1611531, AA224889, AL044701, A1310787, AA904211, A1889955, A1828721, A1653999, AW082104, AA468505, A1182873, AA487209, AA644090, AP62030, A1349130, AA613624, AA557945, AA5325331, AA640104, AA278954, A1792092, A1821056, A1821805, AA493808, AW170385, A1732705, AA551519, AA232928, AA230025, A1653776, A1734119, A114494, A120282, AA640305, AA653139, AW020094, AW021015, AA359267, A1567676, AC005295, AC005067, A1035681, AL022316, AC003108, AC002351, Z99714, AC004019, AC005102, AC002554, AL031281, AC003041, AC005520, Z95115, AC006285, AC005632, AC005972, AF001549, D88268, AP000553, Z95116, AC004448, A1033527, AC005004, AC016025, AP005555, AP005529, AC007510, AL133448, AC004859, AC005280, AD000092, AP000501, L44140, AL009181, AC009498, AC005527, AL121658, AL023879, AC009247, Z93244, Z85986, AC005231, AC005228, AC005288, AL031311, AC004834, AC005081, AP000503, AL135960, A1310116, A121655, U89335, AL133246, AC005808, AP000263, AC004263, AL135960, A1310116, A121655, AC004098, AC005670, AL022721, AC005089, AL050307, AP000104, AC007919, A121655, U52112, AL049738, AC002347, AL008706, U07561, AC004601, AC006511, Z97056, AP000133, AL121754, AC006965, AP000036, AF111169, AL049692, AC006511, Z97056, AP000133, AC005900, AC004526, A1003147, AL132992, AL035684, AC002310, AC006649, AP000691, AC005684, AC002091, AC005277, AL06791, AL031230, AL049757, AC007240, AL031289, AC005011, AF053356, AC006347, AP006688, AC005519, A119054, Z95113, AC006372, AC005071, AF190739, AC004876, AP006006, AC005412, AP000116, A1134726, AC005409, AC003880, AL078581, AC004967, AC005015, AL034400, AL022326, AC005484, AC005006, AL121748, Z93241, AC004973, AC006468, AC005746, AC006014, AC007938, AC005006, AC004897, AP000511, AC005618, AC004797, AL008718, AL121653, AC005488, AC007055, AC003109, AL022329, AC005300, AL133163, AL049636, AL109967, AC005924, Z73979, U95739, AC0084929, AC005595, AC005933, AC004799, AC007676, AC002381, AC007390, AC006241, AC005535, AC006277, Z75407, U78027, AC004125, AC005856, Z94044, AL020993, AC005057, AC007536, AC005086, AF025588, AC002136, U47924, A133353, AL031432, AP000696, AC007436, AC005694, AP000947, AC003956, AC005012, AC002544, AC005041, AL096677, AF109907, AL049835, AP000045, AP000113, AC008372, AL121595, AC003030, AC004765, AC004805, AL031602, AL035588, AL049694, AL034418, AL035422, AC007546, AC005940, AC004815, Z83840, AF015416, AC006064, AC002477, AC003042, A1109865.

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HHEPRI4	2330	869381	1 - 640	15 - 654	W86315, and AL076085
HHEPS91	2331	493744	1 - 552	15 - 566	AA021393, FM4252, AL133083, AL783911, AA557945, AA535216, D44672, AA773463, AL143051, AA062017, AL135246, AA488746, AA828637, AL355559, AA676592, AA900256, AL1269365, TS2772, AA484892, AA419389, AA649642, AA828834, AA533176, AA180056, AA601356, A1813957, AA069389, AL281818, AW089950, AL627917, AL753536, AW277109, AA745524, AL217116, AA568314, N95817, AL356440, AL620585, AA491423, AA355367, AA610433, AL635677, AL754293, AW028950, AL623764, AW104788, AL872503, AA5579188, AL810584, AA744465, AA745470, AA744449, T47138, AL242502, AC004752, AC009275, AC007955, AC005229, AL049832, AC008009, AC005527, AC005529, AC002425, AC003108, AL031681, AC004019, AP000014, M13792, AC007386, Z99716, AC002543, AC007055, AL008582, Z83844, AC005180, AB020865, AC010205, AC004876, AC005409, AC000025, AC005510, AF001548, AC008312, AL049759, AL096701, AL049869, AC007731, AF134726, AC007161, AL121603, AC005500, AC004984, AL121769, AL008718, AL121638, AC006449, AC005156, AC004655, AL033527, AL022320, AF019413, AP00212, AP000134, AC005089, Z98884, Z97196, AC005081, AC002456, AC007687, AL049776, AL117694, AF11168, AL133163, AL034417, AC005823, AC006511, AC005328, AC005971, AC009247, Z98304, AC000353, AC004067, AC007686, AC004796, AC006468, AC007376, AC008124, AC012627, AC005015, AC005899, AL021407, L78833, D87675, AC002432, AC006578, AC004859, AL021154, AC007216, AL035659, L7007688, AL003147, AL121653, AL031074, Z84469, AC007263, U80017, AL133245, AC002402, AP000509, AC004686, AL031295, AC004103, AC007546, AL135744, AP000430, AC002477, U91323, AP005501, AC000004, Z84467, AL050343, AC005722, AC002553, AC007367, AL096678, Z98257, AC008372, AL190554, AL022313, AF109907, AC007226, Z98751, AC002400, AP000141, AL049757, AC000052, AC006211, Z86690, AC005011, AL035249, AF205388, AC004895, AC007308, U91318, AC004253, AL022336, AC005962, AL023166, AC004821, AL096710, AL121655, AC000045, AC005519, AC006285, Z98949, AC007283, AC004106, Z93023, Z83822, AL024498, AL022238, AL034420, AL021395, AC005972, AC006536, AC004883, AC008040, AC007277, AC005041, AC007566, AC006538, AC005332, AC002350, U91322, AC005484, AC004832, AC006559, AL022721, AL031273, AC005209, AL009051, AP000551, U52112, AC005291, AC005531, AC005358, AL022719, AF004858, AP000555, AC006121, AC000003, AF001550, AC005686, AC016025, AC004622, AC006077, Z97183, AC006059, AC008015, AC005746, AC002991, AC002470, AC008079, AC005874, AF134711, AL133246, AC005037, AL035423, AC003043.

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HHFEPZ10	2332	963715	1 - 155	15 - 169	
HHFEB17	2333	918056	1 - 408	15 - 422	
HHFEB47	2334	841899	1 - 464	15 - 478	
HHFEG21	2335	934680	1 - 457	15 - 471	
HHFEG45	2336	717303	1 - 306	15 - 320	
HHFEG52	2337	956214	1 - 191	15 - 205	
HHFEG72	2338	922619	1 - 329	15 - 343	
HHFEG86	2340	784752	1 - 387	15 - 401	
HHFEG75	2339	760960	1 - 375	15 - 389	Y17793.
HHFEGH63	2341	744596	1 - 386	15 - 400	
HHFEO17	2342	952416	1 - 227	15 - 241	
HHFEO11	2343	966293	1 - 408	15 - 422	T89011, and AL047171.
HHFEO182	2344	728596	1 - 370	15 - 384	AA659367, and AA661891.
HHFEO189	2345	786607	1 - 173	15 - 187	
HHFEOX01	2346	871911	1 - 582	15 - 596	AA489782, and AF129078.
HHFEOQ36	2347	707926	1 - 445	15 - 459	
HHFEOP38	2348	709076	1 - 394	15 - 408	Z98256.
HHFEOP83	2349	780397	1 - 676	15 - 690	AA720645.
HHFEOQ47	2350	690160	1 - 428	15 - 442	AF104235.
HHFEO317	2351	662203	1 - 499	15 - 513	
HHFEOQ09	2352	755007	1 - 451	15 - 465	
HHFEOV03	2353	923324	1 - 475	15 - 489	Z27104, AA047563, and AL123214.
HHFEOV39	2354	932851	1 - 873	15 - 887	AA355773, and AA355926.
HHFEOX60	2355	915561	1 - 453	15 - 467	
HHFEOY32	2356	698633	1 - 365	15 - 379	AA353703.
HHFERA17	2357	858239	1 - 257	15 - 271	
HHFER003	2358	933271	1 - 422	15 - 436	AL041364, AA381202, H22202, AA573189, AL623423, A1889612, AA130055, A1298936, AA688189, AA026119, AL046322, H82057, AA301758, and AL049795.
HHFERB04	2359	854112	1 - 1070	15 - 1084	AA102072, A1124646, AA136417, AF169548, and AC004099.



HHERN1	2360	966003	1 - 363	15 - 377	
HHERO39	2361	858238	1 - 426	15 - 440	
HHERO95	2362	928142	1 - 1324	15 - 1338	AI761092, AW088116, AI660060, AA460070, AI823894, AI377047, AA833746, AW022132, AI660032, AI573194, AA938309, AA741093, AW294514, AA856722, AA459978, AI635527, AA948449, AA767492, AA311065, AW183379, AI167213, AA621378, and AI133101.
HHERO04	2363	925697	1 - 504	15 - 518	
HHERO30	2364	858049	1 - 793	15 - 807	AA151636, AA478851, AI018742, AI335888, AI268195, AA479950, AI436179, AI268216, AA360626, AW362452, and AA021655.
HHERO77	2365	934167	1 - 473	15 - 487	AW276744.
HHERV38	2366	933142	1 - 440	15 - 454	
HHEROX04	2367	925700	1 - 643	15 - 657	AA749124, AW024899, AI738779, AW298129, AI936218, AI472304, AI418577, AI309735, AI081335, AI809820, AA016255, AA054132, AI024619, AA905716, H21932, AA256702, N79804, N77846, N77838, AI874019, AA872041, and AC004895.
HHESF07	2368	952214	1 - 588	15 - 602	AI248073, AA235254, AI658612, and AA250935.
HHESG02	2369	918639	1 - 316	15 - 330	Z73495.
HHESH33	2370	893701	1 - 482	15 - 496	
HHESJ02	2371	792431	1 - 241	15 - 255	
HHESI93	2372	922998	1 - 569	15 - 583	
HHESK56	2373	779164	1 - 534	15 - 548	
HHESN02	2374	918634	1 - 390	15 - 404	AF085233, and AF169035.
HHESO94	2375	793390	1 - 607	15 - 621	AF150222, and AF161351.
HHESF87	2376	858224	1 - 671	15 - 685	AA598870.
HHEST60	2377	858220	1 - 300	15 - 314	AL023584.
HHESU02	2378	918668	1 - 490	15 - 504	AP000689, AC006312, Z84466, AI080243, AC005722, AF064861, Z83822, AF001549, AB026898, AI031311, Z84480, AI035681, AI096763, AC003071, AB003151, AC002310, AC005796, AC003101, AC005081, AC005049, AC004031, AP000499, Z82203, AI022336, AC004526, Z83847, and AC004448.
HHESU03	2379	922030	1 - 671	15 - 685	AI929353, AA310170, and AW401881.
HHESU54	2380	926341	1 - 412	15 - 426	AA804825, AA113301, AW264764, AI580548, AA130859, AA581238, AI805438, T66032, AA533703, AA578089, AW265073, AI963514, AW274078, AA494038, AA984263, AA630834, AA601318, AA341817, R42117, AA811489, AW402458, R64204, AI138271, AA486106, AA708021, AA069589, AA470544, AA059369, AA339011, R43218, AI057350, AI354862, AA628627, AA857296, AA814527, H46593, AW327868, AA584513, R15075, AA810200, AL009029, AC008134, AC006965, Z97181, AC004104, AP000018, AC004791, AC005881, Z97055, Z85996, U91321, AC004167, AI034548, AI023284, AC005067, AC004895, AC006211.
HHESU85	2381	783820	1 - 324	15 - 338	

HHESV46	2382	935074	1 - 511	15 - 525	<p>AC003042, AC008062, AC005620, AL021407, AL078472, AC002487, AL080245, AF038458, AF064858, Z83846, U52112, AC005184, AC007182, AF015720, AC005829, AC006050, AJ229041, AC007688, AC004752, AC004125, AC004934, AC003035, Z84814, AC005358, AL034417, Z98044, AC005598, AL109753, AL031665, AC006065, AC006120, AL009183, AC008729, Z93930, AC006454, AC005913, AC002300, AP000022, AC005666, AL133448, AP000511, U89337, AC005668, AC004381, AL008638, Z95115, AC005015, AL035457, AL096791, AL008720, AJ251973, AC004876, AC004938, Z83733, U95743, AC005736, AC004864, AC004887, AL049749, Z97353, AL022318, AL034549, AC004231, AC005102, AC003687, Z72006, AC004750, AC005820, AC006039, AC004816, AC004967, AF126403, AL035695, AL020995, AC010206, AC004991, AC003010, AC007993, AC005353, U07563, AC008123, AC002302, AC007546, AC004991, AC005224, AC005386, AP000216, AC004794, Z95114, AC007115, AL109984, AC006638, AC005224, AC002351, AL034429, AB023054, AC007225, AC006040, AC016831, AC005295, AC007686, AC002351, AL034429, AB023054, AC007225, AC005220, AL031650, AC005831, AC007073, AC007157, AL096772, AP000265, AF015416, AC007773, Z82198, AL133445, AF130343, AC005808, AC005277, AC004663, AL049830, AL031767, AP000034, AP000101, AC009363, AC004659, AC005291, AC004584, AP000240, AC004693, AC006060, AC004551, AC005822, Z82189, AC004609, AC007193, AC007297, AL079342, AL109653, AP000208, AP000130, AC006162, AL031681, and AC002347.</p> <p>AA569179, AA299351, AL679759, AV238495, AL246061, AL054090, AL620266, AL298079, AL185394, AA856866, AA434346, T08386, AT114494, AA582746, AA192293, AA657910, AA768179, T06292, AL039309, AL037836, AL042373, AA741301, AL251241, AA527109, AL630894, AL284543, AL254770, AL251944, W96277, AL251034, AL251203, AL251284, AW128881, AL590404, AL250552, R32529, AA579399, H43183, AH79068, H16875, AW408767, H24957, AA502688, AA846923, D82321, F08214, T41134, AA744095, AA662614, F37201, AL249853, T05617, AW019964, AA736713, AL207728, AL285493, AA878407, AL236626, AW303098, AW341382, AL889579, AL345394, AA484892, AL445373, AL348780, AL038977, AL671077, AL143653, AL036909, AG654535, AA484298, AL973173, AA363957, AA020882, AL707744, AL39676, AA353168, AV303822, AH21755, AL124779, F17537, AA295893, AW079737, AA295899, AA82536, AL863279, AA410771, AA831919, H63220, AA469230, AA480486, AL137946, AL678476, H58891, AL281401, AL860535, T63895, AA57426, AA714073, AA364236, AL0744181, AW151549, AL619994, AL821641, AC006360, AC005084, AL049856, AC007655, AC005234, Z73900, AL122020, AL035458, AL132666, AC005768, AL096791, AL132641, AC004996, AC006317, AC006236, AL117738, AL132662, AC004820, AF205588, Z92844, AC005998, Z78022, AC004084, AC006343, AC005996, U80017, AC005993, AL117733, AC004815, AL021368, AC004382, AL078477, AL035525, AC005879, AB017602, AF029308, AC005050, AC004974, D83253, AC007537, U91319, AP000106,</p>
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HHETA53	2383	858211	1 - 751	15 - 765	AC011311, AL133445, AC004053, AC007731, AL009174, AC005500, AC005539, AC002565, AL023653, AC004905, AC008122, AL020995, Z54246, AC006987, AC007276, AC004605, AC018769, AC004485, AF126403, AC002480, AC005516, Z97181, AL024497, Z99571, AL078604, AC0010205, AF001549, AC006453, AC005610, AL022319, AL117556, AP000279, AC007786, Z83820, AL022162, AC005908, AL049569, AL021396, AC006052, AL135879, AL121790, AP000038, AC004649, AB020869, AC006077, AC005915, AC006160, AC004158, AC002994, AL049650, AC007395, Z93928, AC000120, AL008583, AC006381, AC006572, AC005230, AC008069, AC006333, AC005094, U83672, AC006430, AC005488, AC000500, AC004134, AL109847, Z81369, AF107885, AF064866, AL079295, AC000690, AC005220, AC007444, AC007406, Z82194, AL136504, AL031427, AL008635, AC004935, AL133353, AC005410, AL034402, AL096712, AC007738, AP000301, AC004881, AC005272, AF111168, AF124730, AC004525, AC007238, AF039906, AC002301, AC006459, AC004001, AC005878, AC005095, AC007387, AL049776, AC008984, AC004950, AC006288, AF222686, AB026898, AC008079, AC008125, AC005826, AL136297, AC005881, AL035634, AC006398, AC005030, AC004916, AC006379, AC006254, AL031681, AL049777, AL035249, Z99289, AL022578, AC004694, AC003049, AC005237, AC008179, AL022345, AP000045, Z82203, AC005752, AC007541, AL031672, AL118497, AL050337, AL022329, AC008015, AL118573, Z76735, AC004645, AC009542, AF130248, AC009330, AC004453, AC004712, AC008012, AC005035, AC004448, AC005823, AC002525, AL021578, AC006197, AL021918, AC006544, AC009460, AC007514, AF064865, AP000555, AC005033, AL049836, AC005376, AP001068, AL033504, AP001067, AC002303, AL137100, AC000395, AC005639, AC004692, AC004830, AL022717, Z99943, Z95327, Z99128, AL078603, AL011930, U89335, Z69890, AC006374, AC003065, AL049833, AL008718, AC006373, AC006111, and AP001054.
HHETB42	2384	973127	1 - 218	15 - 232	
HHETCS0	2385	927000	1 - 368	15 - 382	
HHETD13	2386	858218	1 - 654	15 - 648	
HHETE34	2387	974392	1 - 719	15 - 733	AA722372, AW440545, AL031119, AL038971, AL041706, AL046746, AA812281, AL10760, AA083046, TS6253, AA410828, AW151713, N48230, AL048125, AA601157, AA653798, AW075511, AA359347, AA459749, AL135377, AL040382, AW245747, AA724333, AL119691, AW303196, AL119762, AL284640, AW301350, AL669615, AL963720, AL334443, AL119691, AL121235, AW274349, AW102811, AA564634, AB924251, AL1791664, AW274346, AL270117, AL492326, AL046409, AL281881, AA503600, AW408707, AL037683, AL041690, AL038705, AA581903, AA478355, AA634889, AL956131, AW193265, AW021583, AL589230, N94311, AL368745, AL367371, AA584167, AL5833283, AW238278, AL040921, AA580808, AA468022, AA579366, AL431303, AA806796, AW069625, AA623002, AA587604, AA507824, AW270270, AL491814, AW020992, AA372481, AA490183, AL732865, AL720702, AL046205, AL168256,

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HHETI07	2388	952218	1 - 321	15 - 335
HHETI94	2389	793420	1 - 424	15 - 438

HHETK07	2390	848748	1 - 1028	15 - 1042	
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HHETM92	2391	790879	1 - 435	15 - 449	AC005158.
HHETQ54	2392	908567	1 - 713	15 - 727	AL885183, AA903775, A1554613, AL291322, AL1916978, AW135652, AA393862, and X79828.
HHETR21	2393	936252	1 - 706	15 - 720	H25211, Z44055, AA452343, AA297470, AA366087, AA297673, AA135318, AW161368, AW402965, N46057, Z41875, P59956, AV005173, AA504590, H23102, AL042001, AL041998, and A1865194.
HHETR94	2394	793434	1 - 572	15 - 586	AC005158.
HHETS04	2395	926997	1 - 1022	15 - 1036	AC007225, AC006449, and Z77249.
HHETU20	2396	858206	1 - 456	15 - 470	AC007225, AC006449, and Z77249.
HHETV35	2397	784894	1 - 210	15 - 224	AC007225, AC006449, and Z77249.
HHETX01	2398	915284	1 - 322	15 - 336	AL035079.
HHETY79	2399	774171	1 - 366	15 - 380	AA310882.
HHEUJA62	2400	945709	1 - 850	15 - 864	AA312734, W23120, AA976304, AA297895, H49170, R76772, B34930, AA356611, AA205378, AA281670, AA352713, AA662069, AA354224, AA521488, AA714210, AW167243, AA448152, D39918, AC004913, and AB023627.
HHELUC31	2401	795268	1 - 772	15 - 786	AA132827, and AL905590.
HHELUC84	2402	788954	1 - 675	15 - 689	AL624024, AA307816, and AB018268.
HHELU01	2403	915274	1 - 203	15 - 217	AA132827, and AL905590.
HHELU86	2404	784879	1 - 719	15 - 733	AL624024, AA307816, and AB018268.
HHELU89	2405	786254	1 - 326	15 - 340	R94055, and AL136295.
HHELU02	2406	918655	1 - 605	15 - 619	AL042433, AL134920, AL134902, AL134524, U46341, AW372827, AL119341, AL134528, AL134518, AL134553, and AR054110.
HHETU33	2407	952043	1 - 293	15 - 307	

HHEVU42	2408	918029	1 - 167	15 - 181	AL560063, and AC005696.
HHEVU6	2409	933921	1 - 251	15 - 265	
HHEVU135	2410	965644	1 - 145	15 - 159	
HHEVU7	2411	952041	1 - 350	15 - 364	
HHEVU7	2412	952070	1 - 414	15 - 428	
HHEVU63	2413	973213	1 - 564	15 - 578	AL043039, AL043019, AW392670, AL119497, AL119401, AL043037, AL119457, AL043205, AL042978, AL042980, AL142132, AW372827, AL042544, AL119399, AL134902, AL043033, AL119355, AL042614, AL119341, AL119391, U46346, U46351, AW363220, AW384394, AL119439, U46349, AL119433, AL043029, AL119443, AL119396, AL134525, AL134524, AL042551, AL119319, AL134538, Z99396, AL119484, AL119324, U46350, U46347, AL119483, AL134536, AL119418, AL119363, AL043099, AL119444, AL043003, AR054110, AR066494, AB026436, A81671, AR069079, and AR060234.
HHEVU395	2414	957950	1 - 393	15 - 407	
HHEVU64	2415	974520	1 - 630	15 - 644	AW084328, AA525807, AA578621, T51832, AW023111, AA219349, AA805795, F24745, AW265688, AL192440, AA654482, H60738, AL633131, AL446259, F30158, AA808982, AA613966, AA639282, AA668587, AA609826, AA621865, AW245354, AL049709, AL635440, AA584655, AP001053, AL049872, AC007371, U47924, AC005484, AF064861, Z83845, AL031291, AC005967, AC007283, AC002094, AC007050, AC006443, AC005369, AC004257, AL109738, L78833, AC004832, Z98200, AC004460, AC005389, AL022721, AL022320, M87889, AL022318, AC006316, U73169, AC006211, AC004865, AC005088, AL024498, AC004890, AF031078, AC005081, AL109984, U96629, AF030876, AC005041, AC005588, AC005913, AC003108, AC008040, AC002128, AL121595, AC007314, AC006277, AC005971, AC005046, AF030453, AC004084, AC006088, AC004217, AL049869, AF043945, AC004750, AL0031286, AC007637, AC004033, AC006501, AC005881, AL035587, AC005412, AC005288, AL034429, AC005348, AC006511, AC005568, AC005837, AL031282, AC018633, AC003101, AC003029, AC002544, AL008723, AC006115, U91326, AC006006, AC005015, AL135744, AC005666, Z85987, U91323, AC006275, Z82178, AL031588, AC006014, AC004517, AC005488, AC004813, AC007690, AC004771, AL021154, AC005049, AC005567, AP000476, AL109827, AL049776, AC007041, AL133245, AC007157, AC005399, AC002527, AL121603, AP000022, AC005180, AL031133, AC004134, AC007766, AC002477, AC004938, Z73417, AC005874, AF134471, AC006165, AC002369, AL031584, AF196779, AL121655, AC005089, Z95331, AC006530, AC005280, AC004673, AC005527, AC006026, AC004998, U63721, AL035659, Z93396, AC002990, AC004953, Z86090, AL109987, AC006538, AL133243, AC005722, AC002395, AC000025, AC005914, AC006512, AC005546, AL049539, AC004821, AL021453, AC004167, AC003043, AC007057, AL133445, AC005216, AC005003, AF095725, AL118497, AC004253, AC006312, AC005887, AL133289, AC004129, AC003007, AL021578, AL022316, AC002554, AL022302, U91322, AC004242, AC009248, AC004067, AL050348,

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HHHEWE44	2416	972319	1 - 722	15 - 736
HHHEWE40	2417	972324	1 - 799	15 - 813



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HHFWL08	2418	957946	1 - 565	15 - 579	AW103406, AL445934, AL653515, AL199816, ALA904211, H73550, N55515, ALA126005, AL247101, AD049676, AL049630, AA856961, AL278847, AL082333, Z97181, AC007371, AC007934, AC006238, AC004531, AL034402, AC005190, AL022316, AC005484, Z94721, AC004491, AF003626, AC009509, AL031277, AC004941, AC006130, AL022336, AC008041, AC005667, AL121892, AL078644, AL049872, AC005921, AC005820, AF030453, AC005015, AC005088, AC005826, AC007277, AC007308, U62317, AC005924, AL022165, AC005668, AC004664, AC004687, AL049869, AL021977, Z97054, AL022163, AL031733, AC012085, AL035458, AC004593, AC007684, AC007012, AC002112, AC004019, AL049709, AL135783,

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HHWTS2	2419	858116	1 - 296	15 - 310	AA457754, F29968, AA525753, AT178533, AL389230, AL860423, AL096953, AA581463, T71936, AA847750, H56721, AL345146, M77974, AL634601, AL439525, AA136897, T40612, H54340, F17312, AA460367, F30933, AL345566, AW272758, AW243817, AA230025, AL610012, AA468371, AL609974, AC006312, AC002476, AL022326, AP000036, AC006441, AC005013, AC004929, AC002347, AC005914, AF196971, AP000010, U93037, AC007731, AC003049, AC005015, AC006449, AC005500, AF139813, AC004228, AF002591, AC005081, U70000, AL022163, AC007845, AP006889, AL096791, AC016025, AC006930, AC005620, AP000501, AC006538, AC006285, AC006064, AC005859, AC005520, AC006241, AC007435, AP0004216, AL049869, AL031277, AC007688, AL035423, AL022302, AC007298, AC005565, AL031427, AL133448, AC004032, AL133246, AC007542, AB003151, AL106628, Z93930, AC005667, AL121638, AC007546, AL049830, AL021918, AC007376, AL031670, AC006251, AC003982, AC002300, AC004991, AL121603, AC007263, AC002312, AC007773, AC005089, AC007690, AL033521, AL021391, AL049757, AL008710, AC006657, AL008710, AC004678, AP000030, AC004671, AC004827, AC008372, AL009181, AC004973, AC005102, AC004675, AL079340, AL031054, AP000049, U80017, Z99716, AC004003, AC006023, AC006211, AL121655, AC015853, AF088219, AC006511, AC005529, AC002511, AC005562, AC006013, U52112, AC002544, AP000311, AC006262, AL121653, AC004703, AC007050, AC003689, AP000045, AC008044,

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HHEZJ38	2435	860048	1 - 510	15 - 524	W26290.
HHEZP45	2436	952047	1 - 187	15 - 201	Z73359.
HHEZP54	2437	952367	1 - 798	15 - 812	AI806206.
HHFHP14	2438	960049	1 - 805	15 - 819	AA331084, AA381071, and AA380862.
HLLAA18	2439	657314	1 - 579	15 - 593	AA332037.
HILBD61	2440	504130	1 - 516	15 - 530	AA332188.
HILCD94	2441	887182	1 - 809	15 - 823	AI823665, AI680854, AA723790, AW195801, AW137032, AW439945, AL924857, AA687329, AA743184, AA764896, W93389, and AA33212.
HJAAH06	2442	960647	1 - 631	15 - 645	AW163254, AA314521, AA354171, AA361131, AA337563, AA354364, AA330348, and AF113538.
HJAAW73	2443	530476	1 - 451	15 - 465	AA354447, AI909885, AI940079, AI909850, and AI909873.
HJAAW73	2444	530472	1 - 436	15 - 450	AA354714, W86159, and AI440452.
HJAAU52	2445	530473	1 - 541	15 - 555	AA169182, AA354783, AA852481, AB028893, Z64482, and Z64483.
HJAAU57	2446	661275	1 - 293	15 - 307	AA354792, AA354785, H67171, AA309969, R91175, AA502207, AT743721, R76258, AC004762, AC006511, AC005747, AC004821, AC000386, AC003101, AL031259, AC004382, AC007040, AL109798, Z85987, AC004843, Z99128, U73167, U90094, AP000300, AL031848, AC007055, AC005546, AP000045, AP000113, AL035587, AF205588, AP000962, AC002306, Z84469, AC004791, and AL040591.
HJAAV29	2447	669278	1 - 300	15 - 314	AA354798.
HJAAV82	2448	738993	1 - 669	15 - 683	H38110, AA354829, and AA242784.
HJAAW39	2449	530468	1 - 417	15 - 431	AA354854.
HJAAW48	2450	530641	1 - 391	15 - 405	AA354890, F00066, AA629836, AI446336, AC005288, AC002418, AL035405, AC003684, AL049631, AC006088, AC005800, AC004814, AL133445, AC000353, AC004386, AP000493, AC004966, AC004883, AL021154, AC003447, AC003098, AL022476, AC006449, AC006511, AC006312, AL034429, AC005229, AC004491, AC007774, AL050307, AC006501, AF111168, Z98742, Z98036, AF190465, AC006538, AC004699, AC006026, AL096701, AC004967, AF053356, AC008115, Z99716, AL050318, AC005696, AC004821, AC004812, Z98051, and Z68756.
HJABB37	2451	530467	1 - 421	15 - 435	AA355113, AW068073, AA425026, and AA157625.
HJABC27	2452	669059	1 - 367	15 - 381	AA355129, AA287703, R05710, T83234, AB023172, and AF143869.
HJABH14	2453	530465	1 - 310	15 - 324	AA310688, and AA355321.

HJAB06	2454	954589	1 - 475	15 - 489	AA309620, and AL023806.
HJAB04	2455	925557	1 - 493	15 - 507	AA309924.
HJABV44	2456	871824	1 - 556	15 - 570	AA310251, AA831330, AA302870, AA811673, AL076729, H67854, AA601376, C14014, AB869406, AL133555, Z93241, AC007308, AC006162, AC005000, AC007160, AC006115, L78833, AL049793, AC005081, AC006011, AL034548, Z97056, AC005224, AC006171, AC006318, AC004150, AL022311, AC005015, AC005632, AC006503, AC006021, AP000356, AL050312, AC005562, AC004099, AF165926, AC006211, AC002044, AL031311, AC005971, AC008012, AL031255, AC002470, AC007283, AC004106, AC004757, AC001228, AF006092, AC000133, AP000211, AP000030, AC005726, AL049829, AF196971, AC005529, AP000252, AC005305, AC002115, AC006487, AL020997, AF001548, U95990, Z93016, AL049694, Z97054, AC004686, AC005800, AC005902, AC007227, Z83844, AL096701, AL021391, AF205588, AC0010077, AL049757, Z94801, AC007350, AC004655, AC004882, AC005874, AF134471, AL031767, AL109914, AB023049, Z93023, AC007227, Z83844, AL096701, AL021391, AF205588, AC0010077, AL109839, AC007350, AL031668, AF055066, AF134726, AC002306, Z94056, AC001052, AC004659, AC004966, Z83838, AC004685, Z97989, AC005822, AC005755, U62293, Z98200, AC005722, AC004156, Z99570, AB020871, AC007664, AC007537, AC004148, Z98048, AC008018, AC007021, AL109984, AL022238, AC005049, Z83732, AC004983, AC006549, AC005538, AC007193, AP000311, AC002347, AC007057, AL133448, AL031281, Z92542, AC005057, AP000049, AL022323, AC005962, AC004910, AC006014, AL022316, AC004816, AC005011, AC004699, AC005180, AC007934, AL024507, AF030453, AC004998, AP003529, AL139054, U62317, AF037338, AC009247, AB020870, AL096791, AC005911, AF196779, AC005484, AC007684, AC004797, AL031778, AB023048, AC003110, AL031597, AL035695, AL008734, and AP000088.
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HJABW28	2458	958721	1 - 368	15 - 382	AA310349, H63791, H63751, AA488729, AC004236, AC004466, and AA240375.
HJABX33	2459	966611	1 - 425	15 - 439	H64513, and AA310354.
HJABX68	2460	861548	1 - 483	15 - 497	AA310646, AA354853, AW405591, AW402676, N76224, M42680, and AL290663.
HJABZ52	2461	857454	1 - 438	15 - 452	AA310693, H83593, AA236501, AF150367, AL003563, Z61190, Z60182, and AF161557.
HJACB80	2462	746411	1 - 545	15 - 559	AI094227, W92159, AA825437, R02713, AW205546, T86217, AA885954, W86575, AA904189, W86709, F17491, AA310834, and AC008014.
HJACC59	2463	534867	1 - 505	15 - 519	AA310956, AA355111, W79349, D81026, C15076, C14389, AW377671, D80522, D59467, D80164, D59502, D81030, D80166, D80193, D80195, D80291, D59978, D59627, D80133, D59275, D80038, D80022, D80212, D59619, D80210, D80240, D59079, D80196, D51213, D80227, AA305409, D80219, D58283, D51022, D59859, C14331, AW384820, D50995, AW384832, D51423, D51799, D80253, D80251, D80043, D80045, AA305578, D51060, D80269, AA309971, D80248, C06015, D80258, D80188, D59927, D59610, D57483, D80378, D80366, T03269, D80268, AW178986, D59889, D80024, AA514188, D80439, AW177440, T11417,

HIACC67	2464	518222	1 - 343	15 - 357	<p>D80241, AA514186, AW178893, D80064, D80247, C14077, D80302, D80157, AW360811, C14014, D59373, D51103, AW177501, AW177511, AW179328, AW177734, C14227, AW369651, AW178759, D80014, AW377853, D51759, AW378533, AW375405, AW360844, AW352117, D81111, AW178906, AW377676, AW179019, AW178775, D58101, T03116, D51250, AW178762, AW352158, AW366296, AW3760817, D59503, AW177505, AW179020, AW375406, AW378534, AW352171, AW179332, AW377672, AW179023, AW178905, AW177731, T02974, AW178754, AW179024, AW352170, A1525923, T88593, AW360841, C14407, AW378528, D45260, AW296085, AW178909, AW174556, C14298, AW179004, F15647, C03092, AW178907, AW178908, AW179018, AW178911, AW378540, AW352120, A1557751, A4809122, H67854, H67866, AW179017, AW378539, AW179009, AW179012, AW178980, D59695, AW177733, A1525917, AW360834, AA380490, D80168, AW367950, AW178914, AW178774, AW1778543, D59317, A1905856, D59551, AW178911, AW378525, A1535686, D58246, D52291, AW179013, D80228, C14973, C14344, A151221, AW178781, AW352163, A1557774, D59474, A1525920, AW177728, AA514184, Z30160, T03048, A1525227, Z21582, C05763, D80949, A1525242, A1535959, C14046, H67858, A1525925, A1525235, A1525215, D51079, D45273, C13958, A1525912, AA285331, AW378542, A1525903, D31458, C16955, T02868, Z34542, A1525237, AF058696, A84916, A1132110, A62300, A62298, AR018138, AR008278, A82595, AF036905, AF028859, AR060385, AF036906, A1723280, AB002449, X67155, Y17188, D26022, A25909, I50126, I50132, I50128, I50133, Y12774, A67220, D89785, A78862, D34614, A45456, AR060138, AR016514, I62448, D88547, A26615, A6052274, I14842, A94995, AR066488, T09669, A43192, A43190, AR038669, AR008443, AR066487, X82626, A30438, AR025207, AR054175, Y17187, D50010, A63261, AR008277, AR008281, AR008408, AR062872, A70867, AR016691, Y17189, U46128, T79511, A64136, A68321, AR060133, D13509, X68127, and AFI23263.</p> <p>AA309853, C14014, D59859, D59889, C15076, D51423, D80253, D59467, H67854, D80166, D80212, D51799, D59619, D80210, D80240, D57483, D80164, D80024, D58283, D80188, D80195, D59275, D80219, D81030, D80391, D80043, D80227, D59502, D80366, D80196, D80022, D59927, D59610, D80038, D80269, D80193, AA305409, D59787, C14331, D50979, C14429, D50995, D80241, C14389, T03269, D80378, D80045, D51060, C75259, D80134, AW377671, AW178993, A913895, D80268, A9378532, A1114875, D80251, D52291, AW369651, D51022, AW178773, D51250, D58253, W89152, D59695, D80949, F15647, AW179328, C14298, AW352138, D80064, D51079, AW177440, Z21582, AA305578, D80168, D81026, D80248, AA594198, C14407, AW378540, D80522, AW178762, AA745570, AA514188, AW177501, AW177511, AW352117, AA514186, D80133, AW360811, A1905856, A51097, H67866, AW375405, AW360844, D80132, R84431, D88547, A62298, A84916, A62300, AJ132110, AR018138, X67155, Y17188, A67220, D89785, A78862, D26022, A25909, D34614, AL049795, AF181897, AF068862, AC004612, AF049895, AC002070, I82448, AR008278, AF058696, AC004922, AC002350, AR025207, AL022319, X0204477, X32626, AL021026,</p>
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HJACE79	2466	666768	1 - 461	AA311091, AA354762, S82823, D80043, D80268, C14389, D80188, D57483, D80022, D80166, D80253, D80195, D80391, D51423, D59619, D81030, D59859, D80210, D51799, D80240, D80196, D80212, D80227, D50979, D59502, D59927, D80219, D59275, D50995, D59889, D80038, D80193, D80269, D59787, D59610, D80366, D51060, D80024, D80164, D80241, D80322, D59467, D80378, C15076, D80045, D81026, AW177440, AW177501, AW177511, C14014, AW377671, AA305578, C14331, AW352117, AA514188, AA514186, AA305409, D51022, D80248, T03269, AW178893, AW352120, D80247, AW360811, D80251, D80133, AW179328, T03116, D58253, AW375405, AW360844, AW378532, AW178906, AW179024, AW177505, AW178775, D80132, AW366296, D51213, AW360817, D51250, D80302, AW375406, T11417, AW352138, AW378534, AW352171, AW178762, AW179332, AW377672, AW352170, AW360841, AW179023, AW178905, D80439, D80134, F13647, AW178754, AW177731, AW179018, AW178971, AW179004, D51079, D59627, D80168, AW178781, AW179017, D80014, AW178980, AW179329, C14227, AW179012, AW352174, D81111, AW177733, AW378528, AW178908, D51103, AW367967, C06015, AW178774, AW378540, Z21582, AW178983, D51759, C14407, AW179009, AW178914, AW378543, AW378525, C14298, D80064, A905836, AW352163, AW178911, AW177728, T48393, D58246, D59503, AA285331, AA809122, T02974, AW360834, AW178986, D58101, D45260, D80258, AW177734, C03092, H67866, AW367950, A1525923, A1527751, AW369651, H67854, D60010, AW378533, AW378539, D51097, D59474, C14344, D43273, D51231, A1525917, D59317, AW179013, AW178759, C14973, T03048, A1525227, D51221, C14046, A1525920, AA514184, A1557774, A1535961, A1535686, C16955, H67858, D59551, Z33452, Z30160, A1525912, A1525235, A1523242, AW378542, A1525925, A1525927, A1523215, C05763, A1031005, A62300, A1132110, A84916, A62298, AR018138, AR028859, AR058696, AR008278, X67155, Y17188, D26022, A25909, A67220, D89785, A78862, D34614, Y12724, A82595, D88547, A94995, A8002449, AR003383, X82626, AR016808, AR008443, AR025207, I50126, I50132, I50128, I50133, AR060138, AR060488, AR016514, A45456, A26615, AR052274, AR060490, Y09669, A43192, A43190, AR038669, AR066487, I18367, AR054175, A30438, X68127, I14842, A8012117, D50010, Y17187, A63261, A70807, AR008277, AR008281, AR008408, A85396, D88507, AR066482, A44171, AR062872, A85477, AR016691, AR016690, U46128, I19525, D86792, X93549, D13509, A64136, A68321, AR060133, T95111, AF123263, and AR008382.
HJACE74	2467	659329	1 - 635	AA311125.
HJACE47	2468	507156	1 - 910	W94499, AA311178, AA508770, A176314, and A1117328.
HJACH86	2469	784634	1 - 258	AA311347, and AC002310.

HIADD60	2470	708664	1 - 321	15 - 335	AA713522, AA687156, AA459001, AA250811, and Z98046.
HIBAB01	2471	961088	1 - 292	15 - 306	AA355427.
HIBABD34	2472	508225	1 - 121	15 - 135	AA355455, AA355516, and AC005156.
HIBAG75	2473	523069	1 - 266	15 - 280	AA355499.
HIBAT26	2474	522697	1 - 269	15 - 283	AA356012, AI969579, AA913841, AA846697, AI224479, AA505890, AI360528, and AA765212.
HIBAX43	2475	929793	1 - 290	15 - 304	AA356074, and AC000665.
HIBBD13	2476	765075	1 - 198	15 - 212	AA356340.
HIBCT43	2477	574259	1 - 414	15 - 428	AA306860, AA312440, AI478642, D59627, D80168, D59695, D52291, T03048, D45273, D51213, CI6955, CI5076, D59275, CI4298, AA305578, D80251, D80949, D51799, D51079, D80269, D57483, D59467, D80227, D80366, D59889, D80223, D81030, D80164, D50979, D59610, D80024, D80212, D80195, D80196, D80188, D80219, D59502, CI4331, CI4407, D80045, D50995, AV360780, D58283, D51022, D59859, D80022, AA305409, D80166, D51423, D59619, D80210, D80391, D80240, D80043, D59787, D80064, D80038, D80378, D81026, D80241, D80193, D59927, D80228, CI4227, AA514188, D81111, Z33452, D80258, D59503, D80014, D58246, D58101, D80133, AI535686, D51060, AI557774, D80248, TI1417, AV377669, D52059, T02974, F13647, CI4014, D80522, Z21382, Z30160, C06015, CI4077, AA341486, AW377661, H67854, H67866, D59531, D80268, AI525216, AI525228, N66429, AI577751, D60214, D80302, AA809122, AI525969, D59317, CI4344, D80439, C03092, D80157, CI3938, CI4973, D59474, T03116, D80247, C04682, T02868, AI525978, D51103, AA514184, AI525238, D51759, D51221, AI525242, AI525903, AI525923, CI4002, AI525920, H67858, D31458, AI525277, D45260, C05763, AI525237, AI525235, AI525912, AI525215, AI535961, AA305720, AI525917, AC003682, AJ132110, A84916, AR016808, AB028859, X64588, A62300, A62298, AR018138, AR008278, AB010386, AF058696, I79511, AR060385, AB019242, U37689, I81198, AB002449, I14842, A82595, A47134, AR054175, AR008277, AR008281, AR060382, and Z82032.
HIBDB28	2478	839067	1 - 199	15 - 213	AA306609.
HIBDG57	2479	750669	1 - 454	15 - 468	AA306410, AW245824, AA313296, AA306336, AW245551, AA304936, AI525315, AA355857, AA382974, AA313343, AA158977, AA306010, AA158998, AA312340, AA341482, AW403283, AA355541, AJ010058, Y18418, AF099084, AF070735, AB012122, AF100694, AB001581, and AB002406.
HIBDL14	2480	960109	1 - 565	15 - 579	AA306649, N76633, Z40822, and Z07989.
HIBKSR6	2481	523007	1 - 336	15 - 350	AA356898.
HIPAH35	2482	509162	1 - 312	15 - 326	Z25932, and Z25922.
HIPAX151	2483	730875	1 - 335	15 - 349	AI940546, AI859744, AI459866, AI671077, AW236342, AA372106, AW265654, AA024517, AW440976, F23274, F48226, AW406162, F34511, AA614010, AI291124, AI079869, AA634855,
HKBAC12	2484	857298	1 - 743	15 - 757	



AI291268, N54179, AA025083, A1537030, AA663482, AA501600, F33121, AA626678, AA834799, AW188484, AA127486, AA318652, AI205126, AA327572, AI282310, AI886365, AL041706, AA666059, AA054106, AA077817, AA372881, W32993, AA515224, AA715606, AA987962, AA593060, AI301273, H64777, AI287485, T40077, AA347927, W47444, AA654322, AA381747, AA520416, AI341548, AI039451, N43757, AI331164, H43183, N39611, AA528441, AA180964, AA215929, H04867, AI190960, AI718446, AI815583, AA656700, AI678392, AA586655, AI110770, AA347930, AA501199, AL041368, AA661103, AI816537, AI330440, AI282832, AA351845, AA504951, AI921649, AI635274, AA723017, AI1338065, AI702835, AI376100, D29019, AA745410, AI049649, AI865905, AI921296, AW029038, AI078061, AA533408, AI862050, AI356904, AI732162, AI564284, AI499094, AI802526, AI873916, AI821172, AI982634, AI370475, AI049722, U34879, AF207550, AC005071, AC006241, AI035071, AC004659, U91326, AP000255, AC007057, Z99943, AL049872, Z85987, AC005358, Z93017, AL049793, AC004815, AC006557, AL008629, AP000213, AL022326, Z83322, AP000135, AC007191, AL031428, AC004106, AD000092, AL021937, AP000111, AL049757, AC004922, AC002404, AF010238, AL033518, AC009247, Z54334, AC006111, AC005037, AC005041, AC005144, AL049776, AC005932, AL022238, AL022163, Z92542, AC007263, AC004526, AC005570, D87012, AC004834, AL031662, AL073284, AC005543, AC006571, Y11107, AL035072, AC005066, AL009181, AL035405, AC005695, AC003101, AC004823, AC004130, AL049636, AC005940, AL031668, AC007055, AC004941, AP000553, AC002350, AC005328, AC005988, AC004801, U47924, AC005542, AC005789, AC008040, AC005527, AL022302, AC005696, AC002310, AC016025, AC005564, AF196970, AC002455, AC005565, AC005049, AC006965, AL050338, AC005759, Z93930, AL078581, Z84721, AC003043, AL034553, AC005666, AC007226, AC005193, AC004821, AC005529, AC007666, AC002096, AL022158, AP000517, Z93241, AC005944, AF002993, AC005740, AC002073, AC000353, AC002431, AP000555, AC004224, AC004802, AC004647, AC004841, AL133382, AP001054, AP000504, AP000275, AC006076, AC006050, AC002425, AL132987, AL023575, AL049869, L05367, AC004996, AC006285, AC004915, AL031295, AL133297, AC005261, AL021154, AL034429, AB008681, AP000134, AP000212, AP000030, AC004771, AL035422, AC005225, AL022313, AL035587, D88268, AC005015, AF000350, AC000003, AC004777, AB023054, AP000105, AP000037, AP000045, AP000113, AF165926, L39891, AF095901, AC004638, AL008715, AC006942, AC005412, U95742, AC007421, AF108083, AC004671, AL121707, AC005081, AL031846, AL096701, AC005153, AC006597, AP000349, AC004671, AL133448, AC005089, AC005682, AP000556, AC007151, AC005899, AF196971, AF118808, AC007216, AC004531, Z83836, AP000509, AC004890, AC005764, Z95116, Z69651, AC006048, AC006064, AC005353, AL031848, AL035420, AC005874, AF134471, AC007436, U91321, AC006538, AC002115, AC009946, AL035423, Z97989, AL109627, Z82211, Z98883, AF181896, D16561,			
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HKBA043	2485	934251	1-44	15-58
HKBA127	2486	963724	1-766	15-780
HLADA25	2487	791845	1-428	15-442
HLADA89	2488	786490	1-471	15-485
HLCD878	2489	760896	1-374	15-388
HLA021	2490	531287	1-95	15-109
HLDB91	2491	787578	1-109	15-123
HLKDB22	2492	766876	1-837	15-831
HLKDC49	2493	722400	1-783	15-797
HLICD11	2494	967337	1-322	15-336
HLMAC43	2495	799766	1-368	15-382
HLMAE45	2496	783886	1-309	15-323
HLMAE62	2497	796676	1-163	15-177
HLMAE83	2498	530107	1-297	15-311
HLMAH45	2499	954125	1-532	15-546
HLMAH60	2500	856858	1-108	15-122
HLMAJ54	2501	811183	1-362	15-376
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				AL072605, AL825634, AL291745, AL281084, AL836598, AL01258, AW207800, AL468330, AL559377, AL423842, AW138405, AL598529, AL428226, AW137882, AW149486, AL277002, AW135764, AL630822, AL802000, AW027943, AL4746502, AL479965, AW207230, AL436232, AL299005, AL92316, AL277010, AL805270, AL819704, AL477763, AL333133, AL091828, AL018332, AL369454, N95248, AW134617, AL017173, AL535795, AW274817, AL137677, ALW203971, AL293668, AW140143, AL970870, AW184019, AL526926, AL831623, AL589653, AL745853, AL670914, AL468159, AL2121290, AL304437, AW139897, H97046, AL724268, AL247557, AL737067, AL293000, AL706959, N78408, ALF007887, and AC007041.
HLMAJ84	2502	615300	1-296	15-310
HLMAN25	2503	677519	1-153	15-167
HLMAU11	2504	954571	1-286	15-300
HLMAU43	2505	856884	1-136	15-150
HLMAU70	2506	732665	1-388	15-402
HLMAV62	2507	671905	1-126	15-140
HLMAZ06	2508	960557	1-428	15-442
				AC002073.
				AA262581, H17920, AL479768, AA810033, AL440530, AA384862, C15362, AL110760,

HLMAZ14	2509	932679	1 - 249			AW385729, AC002300, AC003484, AL021878, AC005546, AL132712, Z95331, AC006581, AC009464, AC007387, and AC006398.
HLMAZ72	2510	821500	1 - 592			AT162175.
				15 - 263		AB21467, AL694977, AA230143, AC006480, Z83838, Z81370, AL022324, AC007227.
				15 - 606		AC005057, Z98950, AC006054, AF045555, AC005668, AC006285, AC007917, AF000704, AC005081, AC005821, AL049869, AC002395, AL031662, AC002449, AF000689, AC004185, AC002563, L29074, AC006039, AC000052, AC016025, L78810, U52112, AF088219, AC004019, AF152365, AF000509, Z85996, AC004150, AL050338, AC009044, AC004000, AC002059, AC003077, AF064866, AL020993, and AC004638.
						Z97352.
HLMAZ91	2511	920216	1 - 239	15 - 253		AA012851, H86413, AA019024, and H86637.
HLMBB25	2512	792549	1 - 242	15 - 256		AC020663.
HLMBB43	2513	530611	1 - 343	15 - 357		
HLMBB56	2514	968209	1 - 366	15 - 380		
HLMBB77	2515	799744	1 - 331	15 - 345		AA219006, F08248, A053911, A9133714, AW149213, AA846876, A056177, AA297666, A1537772, A1494539, A870197, A1636730, AA410788, C15060, AL037632, AA838190, F12561, N35602, AA127426, AW020088, T07039, AA308716, AA584378, AA621381, A1524360, AA961035, AA588001, AW148507, AA541423, AA213959, AA515457, AW275519, AA475911, AA580088, AA828042, AA747778, AL045808, AL046156, A1791913, AA501699, AW341978, A1792133, A1821714, AW149156, H07953, AW419262, AA630672, A1133297, A1797906, AW270343, H711429, AA954924, AA829036, A1B44995, A1B11276, AA493975, AA478355, A1925579, AA508359, T92321, AW235497, A1499588, AA878409, AL138182, A1827475, AA487621, T74524, A1311927, AL079645, AA493708, AA714276, AA612322, A1223700, AA428778, AA488746, AW023865, AA827231, AW274349, A1687343, F13808, AW378532, AA457070, AA086368, AA663461, AA326139, AA484267, AA372481, AA659360, AA503119, AA436774, AW303196, AA828749, A1688410, AL042977, AA502991, AA745507, A1250281, A17179305, A1825111, A1341571, H73550, AA436782, AA456578, AA522642, AA903253, A1873990, AA469400, A1284640, A1754567, AL035847, A1755214, AA827215, AA4355379, AA484702, A157013, AA658362, AA309257, A1745151, A1451240, A112071, AA380354, A1619436, AA515905, AL046409, AA683082, AL041373, AW408729, AA378690, AA308809, AA745406, A1821785, AA446657, A18914, AA833896, AA533463, AA833875, AA767963, AA508104, AA371482, AA557883, AL036037, AA469451, AA207033, A1796064, AA564865, AL041526, A1678368, AA526856, AA501852, A1791150, AW301350, A1818231, AA463590, AW020340, A1720058, A1040342, A1715814, N23504, A172999, A173856, AA732253, AA749235, A1610219, A1678785, AL048925, AW022655, AA568754, A1292257, A1377161, A1345891, AA788901, AA644090, AA531079, R89542, AA620467, AA630860, AA581123, AA502860, AW259095, A1149478, F25733, A1726277, A1281881, AA846907, A130962, A18029885, U62317, A1800211, A1800133, AC006213, AC005778, AC006144, AC007298,

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			AA548350, and AL035209.	
			AA287609, AW305191, and AA309915.	
			AL035413.	
			AA383383, and AC009509.	
HLMBB80	2516	950730	1 - 355	15 - 369
HLMBB68	2517	735614	1 - 551	15 - 565
HLMBB04	2518	615621	1 - 430	15 - 444
HLMBQ77	2519	954969	1 - 726	15 - 740
HLMBB04	2520	577608	1 - 228	15 - 242
HLMBB82	2521	799755	1 - 331	15 - 345
HLMBV11	2522	967669	1 - 442	15 - 456

HLMBV14	2523	682023	1 - 396	15 - 410
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HLMBV24	2524	825595	1 - 232	15 - 246	AC007106, AC012085, Z78022, AF017732, Z95124, AC002554, AL050348, AC004912, AC004049, Z99716, AC002044, AC009721, AL049835, Z78021, AL008629, Z82900, Z98884, AJ010598, AC006002, AC005323, AL035696, AF222685, AC004908, AL031670, AC005728, AC006432, AC0060515, AF000115, Z95327, AC004984, AP000455, Z97198, AL096707, AL009051, AC009233, AC004020, AL078644, AC005969, AC004866, AC006383, AL022328, AC002451, AF070718, AC004547, AL023578, AC009891, AF003627, AC004384, AL033525, AL031116, AC006565, U91327, AC003216, Z83843, AC005029, AL031785, AC007065, AC006029, AC004531, AC006367, AL133512, AC009405, AC007671, Z98941, AC005993, AC008703, AC004930, AL031285, AL035079, AL121757, AC021092, AL035604, AF001905, AC000119, Y18000, AC000120, AC004035, AP000081, AC008067, Z93928, AL117258, AC008015, AC007340, AC007687, AC004199, AC005532, AP000704, and AC008109.
HLMBV24	2524	825595	1 - 232	15 - 246	
HLMBV72	2525	688069	1 - 295	15 - 309	
HLMBW11	2526	950728	1 - 925	15 - 939	AW009940, AL394293, AL082857, AA227673, AW207417, AA491391, N99896, AA491389, AA227560, AL000839, AA361942, and AF156884.
HLMBX06	2527	954576	1 - 397	15 - 411	AW409578.
HLMBX19	2528	879667	1 - 233	15 - 247	AC007539.
HLMBY16	2529	531053	1 - 193	15 - 207	
HLMBZ31	2530	967640	1 - 270	15 - 284	
HLMBZ47	2531	577605	1 - 348	15 - 362	AC003070, and AL135783.
HLMBZ73	2532	531401	1 - 209	15 - 223	
HLMCA13	2533	790952	1 - 398	15 - 412	R61738, AL117647, AB023195, and AL117518.
HLMCA22	2534	529185	1 - 257	15 - 271	
HLMCJ32	2535	799767	1 - 337	15 - 351	
HLMCJ64	2536	739397	1 - 314	15 - 328	AA719251, and AC005839.
HLMCJ66	2537	707231	1 - 83	15 - 97	
HLMCJ45	2538	698342	1 - 268	15 - 282	
HLMCI50	2539	921041	1 - 179	15 - 193	
HLMCI93	2540	799699	1 - 620	15 - 634	AA192733.
HLMCT06	2541	954615	1 - 378	15 - 392	AC005696, AC006536, AC004500, AC004589, AL096773, AC007023, AC007057, and AL132712.
HLMCT15	2542	507212	1 - 244	15 - 258	
HLMCT24	2543	921543	1 - 231	15 - 245	AL035086.
HLMCT79	2544	916590	1 - 344	15 - 358	AW268314, AA767276, AL032114, F18098, AC007993, AC008085, AC006543, AC006544, AC005697, AC004686, AC005632, AC005730, AP000152, AP000011, AC009542, AC009330, AC005606, Z83840, AC002094, U91319, AC0016026, AL023096, and AC002454.

HLMDP39	2545	883976	1-336	15-350	
HLMDP76	2546	529184	1-92	15-106	
HLMDP04	2547	694910	1-53	15-67	
HLMDP14	2548	799739	1-369	15-383	
HLMDP52	2549	571415	1-170	15-184	
HLMDH54	2550	527128	1-495	15-509	Z8206.
HLMDH78	2551	532741	1-249	15-263	H28779, AL865182, and AL136295
HLMDJ37	2552	577239	1-418	15-432	AL096768, AC002312, and AC005800.
HLMDJ48	2553	720893	1-342	15-356	
HLMDN83	2554	709942	1-340	15-354	
HLMDO02	2555	920859	1-235	15-249	
HLMDO18	2556	527896	1-136	15-150	
HLMDO61	2557	384982	1-141	15-155	AL096755.
HLMDO65	2558	742749	1-456	15-470	AA312110, T62666, H06759, W37108, W40387, AL620464, AL911142, RL2100, W76480, W45377, Z45518, AA313859, and AF190465.
HLMDP35	2559	535500	1-247	15-261	AA3131317, AW250536, AA456441, AA301053, AA301052, and D63782.
HLMDQ37	2560	531232	1-126	15-140	Z83844.
HLMDQ40	2561	531234	1-188	15-202	
HLMDQ60	2562	920837	1-368	15-382	R89560, AA377323, H73561, AA550959, N70472, AA225100, R34070, AA298647, AA458573, AL683547, AA225028, AA063115, AW151247, N63897, T07878, AL889108, AL0966343, AL632447, AA559241, N71619, AA502571, H62923, T03576, AL669711, AL024498, AL021707, AC005971, AC004491, AC003080, Z85987, AC004967, AL022313, AC007421, U91323, AC006153, AC006014, AC005231, AC005089, Z84480, AC007226, AC005488, AL135744, AP000113, AC006038, AF047825, AC005081, AL022165, Z94801, AC007616, AC004955, AC004890, Z83844, AC007725, AL022320, AC004963, AC004893, AC006512, AC004978, AC005920, 297630, AC006241, AF124523, AC004223, AC008040, U91326, AC009739, Z98044, AL035413, AC002663, AC005071, Z98051, AC007676, AL096701, Z98742, AC005057, AP000359, AC005184, AC002404, AL073049, Z85986, AC004000, AC002395, AF001549, AC005342, Z84487, Z99716, AC004839, AC007546, AF000557, AC002544, AL001311, AC005288, AL031289, AC005808, AC004893, AL023575, AC002470, AC004216, AC006285, AC004999, AL109627, Z86090, AC003029, AP000692, Z92542, AF031078, AC004841, AC005102, AC003043, AC002314, AC006077, AP000556, AL034423, AC006538, AC004883, AL022311, AL008718, AC005305, AC002094, AF030876, AC005412, AC005409, AC006160, AL034420, AL111168, AF001548, AB003151, AC007551, AL035415, AC004167, AP000689, AC005015, AC005632, AC005520, Z93023, AL050307, AC008372, U78027, AC003569, AF165926, AC005914, U07563, AL034429, AL050341, AC007182, Z98200.

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HLMDR16	2563	530103	1-113	15-127	
HLMDR33	2564	959707	1-416	15-430	
HLMDR70	2565	531235	1-94	15-108	
HLMDT17	2566	531231	1-210	15-224	AL050337.
HLMDJ04	2567	571393	1-281	15-295	
HLMDJ07	2568	930471	1-456	15-470	AI654933.
HLMDU17	2569	528040	1-219	15-233	AL080243.
HLMDU43	2570	575607	1-359	15-373	
HLMDU54	2571	856877	1-320	15-334	AI337315, AL492017, AI565658, AI565657, AI651781, AI591214, AI565667, and AL022316.
HLMDU71	2572	531228	1-316	15-330	Z74023, and AF172244.
HLMDU96	2573	799729	1-309	15-323	
HLMDV96	2574	934543	1-813	15-827	
HLMDV28	2575	531230	1-293	15-307	AI824014, and T79467.
HLMDW58	2576	799749	1-282	15-296	
HLMDX46	2577	523771	1-306	15-320	
HLMDX59	2578	739523	1-404	15-418	AA666254, R96738, R35404, AI571161, AA584484, AA740297, AA657778, AW089952, AA297844, C05714, H60313, AA587995, AI266003, H51835, H58666, N80546, AI682665, AI382324, T61514, AL118980, AI866056, F00818, AW079664, AI814739, AA603530, AA826081, AA515457, AI865807, AW068316, AA608751, AI872513, R07267, AA639946, AI289941, AI289942, AI955697, AA693484, AL049273, AI135744, AC003109, AC006238, AJ246003, AC007537, AC005736, AC005520, AL049757, AC005015, AC007057, AL049872, AJ010598, AL031291, AC006480, U91325, Z81314, AF187320, AL049748, AL034429, AC005710, AC007899, AF121781, AL121658, AL031670, D86995, AC002430, AC016025, AL031154, AL035249, AC007384, Z97056, AP000269, AP000032, AP000103, AC006964, AC005368, AC006088, AC007731, AC005971, AC005500, AC006026, AL050348, AC005859, AL020997, AC005914, AC006449, AC002363, AP000347, AC002470, AC005513, AL023694, AL133448, AL020993, AL031803, Z94057, Z85986, AF047825, AC004383, AC005059, U91321, AL121655, AP000558, AC006080, AC001228, AF001549, AF111168, AP000350, U62293, AL031281, AL109827, AC007327, AC007308, AC005820, Z98941,



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					AC002400.
				15 - 370	
				15 - 422	
				15 - 132	
				15 - 106	
				15 - 289	
				15 - 330	AC002299.
				15 - 366	
				15 - 558	
				15 - 358	
				15 - 449	
				15 - 437	
				15 - 199	
				15 - 267	
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HLMPF70	2593	856861	1 - 187	15 - 201
HLMPF92	2594	571369	1 - 361	15 - 375
HLMF171	2595	526928	1 - 354	15 - 368
HLMFN24	2596	781780	1 - 313	15 - 327
HLMFN68	2597	799751	1 - 392	15 - 406
HLMFN49	2598	842045	1 - 165	15 - 179
HLMPF72	2599	799709	1 - 356	15 - 370
HLMF009	2600	909666	1 - 372	15 - 386
HLMF013	2601	657283	1 - 289	15 - 303
HLMF039	2602	856872	1 - 326	15 - 340
HLMF052	2603	727197	1 - 319	15 - 333
HLMF090	2604	699667	1 - 323	15 - 337
HLMPW19	2605	534799	1 - 302	15 - 316
HLMPK40	2606	531355	1 - 337	15 - 351
HLMPK50	2607	927675	1 - 289	15 - 303
HLMPG66	2608	799725	1 - 326	15 - 340
HLMPG96	2609	531225	1 - 167	15 - 181
HLMGY13	2610	921457	1 - 280	15 - 294
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				AA938180.
				AL022331.
HLMG709	2611	625638	1 - 290	15 - 304
HLMG723	2612	805813	1 - 295	15 - 309
HLMG065	2613	799736	1 - 342	15 - 356
HLMG083	2614	799770	1 - 383	15 - 397

HLMHG384	2615	572412	1 - 99	15 - 113	AC006117, D87432.
HLMH339	2616	823450	1 - 479	15 - 493	
HLMH440	2617	878117	1 - 325	15 - 339	H44968, A1422305, A1554649, A1433337, A1250867, A1160234, AA503975, R50669, A1672302, A1870048, AW051623, W88425, AW363795, AB022524, A1012652, and AB012162.
HLMH517	2618	714813	1 - 441	15 - 455	
HLMHK16	2619	571414	1 - 317	15 - 331	
HLMHK58	2620	799782	1 - 437	15 - 451	
HLMHK61	2621	856848	1 - 342	15 - 356	AC002301.
HLMHK62	2622	579101	1 - 193	15 - 207	AA700441.
HLMH160	2623	778481	1 - 220	15 - 234	
HLMHM63	2624	578838	1 - 219	15 - 233	AA765146.
HLMHM21	2625	516580	1 - 404	15 - 418	AA285377, AA283300, AW404274, and W24845.
HLMHM27	2626	856846	1 - 318	15 - 332	A1844280, and AW274081.
HLMHM31	2627	925730	1 - 1073	15 - 1087	AA809335, AA836104, AA972108, AA705694, AA836103, AB164926, AA485705, AA485839, A1357107, A1702527, AW084036, A1310573, A1340533, AA693331, A1127565, AA001397, A1334893, AA669025, X80340, M96379, U86379, A1137479, Y10655, AF068229, AF091084, A1137267, A1137558, AF093119, A1110225, A1080126, and X57961.
HLMHN37	2628	723081	1 - 339	15 - 353	
HLMHN45	2629	668906	1 - 256	15 - 270	AC005600.
HLMH011	2630	964945	1 - 125	15 - 139	
HLMH021	2631	799772	1 - 224	15 - 238	
HLMH033	2632	799756	1 - 313	15 - 327	
HLMH067	2633	967636	1 - 343	15 - 357	
HLMH074	2634	953956	1 - 281	15 - 295	AA730448, A1174535, A1674840, T90861, AC004257, AF107258, AC003029, Z95116, AC005764, AC008015, AC004491, A1080274, A1033525, Z98044, AC005803, Z73979, AC000353, A1034376, D86993, A1035608, AC004560, AC004876, AC003035, AC005523, AC005529, A1049569, A1078463, AC002350, A1050318, AC004983, Z97054, AC007637, A1049712, AC016025, AC005553, AC005772, AC002558, A109758, AF196779, AC006511, AC007278, AP000555, AC003101, Z99128, AC000379, A1133445, AC004659, A1080243, AP000038, and AP000106.
HLMTIR25	2635	920711	1 - 297	15 - 311	
HLMTIR55	2636	825530	1 - 204	15 - 218	
HLMTIR51	2637	752375	1 - 308	15 - 322	AB028953.
HLMTIR41	2638	574741	1 - 219	15 - 233	
HLMTIR66	2639	574742	1 - 582	15 - 596	AA234939, A1016356, A1742982, A1089004, AA236782, A1468803, AA236830, AW242613, and AA234938.

HLMT67	2640	579048	1 - 342	15 - 356
HLMT94	2641	531054	1 - 271	15 - 285
HLMH80	2642	799723	1 - 282	15 - 296
HLHW31	2643	536579	1 - 331	15 - 345
HLMT64	2644	866458	1 - 624	15 - 638
AA351877, AI377249, AI377250, AI239499, AC005274, AI132777, and AI103655 AU251696, AI224583, AU254508, AU366896, AU890297, AU338376, AA171400, AU439325, AU238341, AW189371, AA425283, AA642809, AU754926, AA807704, AA469230, AA218684, AU73671, AA669238, AA720582, AU183990, AU801479, AA707747, AA525423, AA679946, AA503298, R99233, AW270468, AU729417, AA601712, AU773737, AU754257, AA084320, AA286836, AW274078, AU784440, N26159, AA197089, AU890468, AA180056, AA113946, AA14503, AU904840, AU860423, AA523812, AU80111, AA828045, AU332615, AA224759, AU744199, AU733523, AA829565, AU913167, AU049994, AU869797, AU800426, AA873737, AU089625, AU328446, AU95206, AU078584, AU005529, AU005527, AU139054, AU006441, AU005940, AU006449, AU024498, AU022316, AU004636, AU004342, AU005225, AU121923, AU023048, AU004797, AU021707, AU007066, AU049712, AU000089, AU004755, AU022237, AU003682, AU111167, AU005210, AU007066, AU049712, AU000089, AU004755, AU022237, AU00141, AU018769, AU007052, AU190465, AU005837, AU003969, AU000501, U73634, AU007488, AU005620, AU007030, AU196969, AU000359, U78027, AU021393, AU004156, AU004263, Y14768, AU031284, AU129756, AU009336, AU006538, AU003036, AU000092, AU000503, AU035072, AU205588, AU015720, AU003007, Z99774, AU022320, D87675 AU035422, AU005070, AU006211, AU006071, AU004638, AU002433, AU005412, AU049761, AU109839, AU005399, AU034548, Z95116, AU022097, AU002347, AU004448, AU007685, AU117258, AU003859, AU000503, AU005803, AU031311, AU022097, AU002347, AU004448, AU007685, AU033533, AU006060, AU049869, AU033381, AU049793, U82668, AU000694, AU196972, AU007346, AU004967, AU004963, AU005988, AU031286, AU006277, AU229041, AU002991, Z98051, AU130248, AU008154, AU002045, AU002470, U95742, AU005778, AU005937, AU023803, AU031602, AU004150, AU049552, AU004814, Z86090, AU007216, AU1009181, AU078621, AU004409, AU005180, AU109827, AU035458, AU006101, AU004021, AU002369, AU005695, AU009288, AU007563, AU007536, AU004584, U91326, AU031589, AU007708, AU016025, Z97630, AU005160, AU005231, AU002350, AU022165, AU004816, AU000354, AU134726, Z93017, AU023575, AU049759, AU035462, Z80998, AU005874, AU134471, AU033527, AU006948, AU005557, AU002314, AU007096, AU121652, AU012099, AU002544, AU000552, AU007390, AU004583, AU033392, AU008018, AU004904, AU049780, AU007068, AU005730, AU002302, AU000511, AU004887, AU004486, Z81315, AU005411, AU005446, AU207955, AU002367, AU000104, AU000032, AU002094, AU005261, AU006197, U91325,				

HLMIH214	2645	799724	1 - 190	15 - 204	AC007225, AL035071, AC005207, AC007324, AC005800, AC004929, AC000353, AC003688, AL008718, AC005237, AL034549, AL035086, AC005841, AC007981, AB001523, AF030453, AC009275, AL049872, AC007845, AC005776, U52112, AC005821, AC007021, AC005344, AP00030, AP000211, AP000133, AL021978, AC004811, AL121603, AC004985, AC007774, AL031680, AC004821, AC005358, and AC005088.
HLMIH259	2646	530071	1 - 184	15 - 198	
HLMIH294	2647	710391	1 - 279	15 - 293	AC0002549.
HLMIH70	2648	578795	1 - 289	15 - 303	AC0009363, and AC007182.
HLMIH22	2649	572424	1 - 132	15 - 146	AL031282.
HLMIH11	2650	967291	1 - 289	15 - 303	AA559319.
HLMIH50	2651	856845	1 - 572	15 - 586	AA569287, AA603349, AAG39913, AA359559, AA524229, AA887181, AA359422, AA424170, AL569363, AW088581, AA491954, AA226204, Z98742, AC005972, Z83847, AC007277, AC006449, AL046471, AL92985, AA226204, Z98742, AC005972, Z83847, AC007277, AC006449, AC007216, AC005510, AC006251, AC005803, AL133445, Z98884, Z82180, AC006453, AL136295, AC004834, Z99716, AB006638, AC004707, AF038458, AC005280, AC006241, AL024507, AC006149, D83253, AF015720, AC004765, AC002565, AL078644, AC006441, AL031283, AC006120, AJ229041, AL096703, Z96074, AC006060, AC005529, AC004106, AL022721, AC004878, AF033356, AL034406, AC008372, AL031659, AL132826, AC002563, AC006539, AL109798, AC002300, AC007021, U95090, AL031005, AC005102, AL133163, AC005291, AC006512, AC005599, AC005484, AC007899, AC004821, AF207550, AC004382, AC002347, AC004750, AC004966, and AL031668.
HLMIH72	2652	799747	1 - 317	15 - 331	H67040, W20228, AL049836, Z94160, AF196969, AC004509, Z97054, AC009501, AC006511, AL023753, Z82244, AF031078, AF030876, and AC002407.
HLMIH10	2653	964890	1 - 387	15 - 401	T03401, AA811741, AA488689, W00856, AA192764, T41134, T07327, AL174489, AA470567, H72444, AA364082, AA368329, AA411590, F00937, AA736713, AA434346, H54729, AA827383, AA741403, AL018726, AA481765, T03928, AA634822, AA527030, T83057, AL143653, AA663373, AA4748840, AA279649, AL130709, AL156588, AL1537995, AW148775, AL14682, AL291439, R95840, AL928890, AA831801, AA230221, AW190277, AA832016, AA668727, T68315, AL626595, AA598889, N80390, AA587835, AA587835, AA214457, AA489240, AA713735, AA598497, AW236235, AA605243, AA167809, AA740571, AL873627, N72170, AL910316, AA714073, AA339123, AW227640, H78808, AL040472, AA598740, AA533660, T46997, AA513884, AL135761, AW079076, H789071, H63220, AW019964, AL150934, AA666066, AA084950, AA846014, AA525407, N47820, H43183, AA515351, AW229465, AL624038, AW237805, AL015948, AA584788, N55296, AA192293, AL162694, AL860535, AL903464, AA084439, AA384531, AL732116, N66744, AA594179, F19019, AL871691, AL039117, AA155817, H78835, AA680221, AA055667, AL114733, AL133552.

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HLMI144	2654	883871	1 - 524	AA773956.
HLMI162	2655	799713	1 - 422	AI133485.
HLMI173	2656	576692	1 - 336	AI880829.

HLMIQ47	2657	531224	1 - 173	15 - 187	R93381, H53163, H28130, R93382, H53060, AW015657, AI092249, T86432, H49391, AW190127, AA0625561, AI339159, AW250827, AI357128, AI148823, AI818046, AA579979, AI439571, AI095655, AW264805, W72325, AA379087, AI817450, AI761511, AA625749, AA099988, AW081185, AW389525, AI885881, AA745180, AA805668, H64600, AA211386, W72109, U51698, AA973184, AI58231, AA379088, AA765921, AI744539, AI885882, AW377601, AA291023, AI933181, AI877742, AA902858, AI911887, AI337237, F37915, AA317577, F34702, W77795, H49202, AI432721, AC003103, AF161395, AI249940, and AF083208.
HLMIQ23	2658	686670	1 - 700	15 - 714	
HLMIQ11	2659	921009	1 - 772	15 - 786	
HLMIQ72	2660	715650	1 - 358	15 - 372	
HLMIQ73	2661	764522	1 - 386	15 - 400	
HLMIQ83	2662	576657	1 - 310	15 - 324	
HLMIQ23	2663	916938	1 - 345	15 - 359	
HLMIQ40	2664	578756	1 - 433	15 - 447	
HLMIQ13	2665	924651	1 - 337	15 - 351	
HLMIQ56	2666	572430	1 - 256	15 - 270	
HLMIQ77	2667	572509	1 - 348	15 - 362	
HLMIQ77	2668	971141	1 - 298	15 - 312	AI880168, AW074398, AA435854, AW169687, AI344844, F19238, AA548137, AI345654, W60516, AA515224, AI205126, AW193295, AA747472, AW265654, AI890928, AI60117, AI914706, AW327360, AI063786, AW265197, F79989, AW261871, F28576, AI569086, AI890570, AW166815, AA229785, AI079910, AI865364, AW188544, AI454536, AI708009, AI674873, AI962050, AI58229, AA308806, AW406755, AI079645, AI565988, AI890923, F36273, AI917271, AI284640, AI929531, AA381903, AI051551, AW339687, AI042856, AA559290, AI635272, AW302709, AA244415, AW162049, AI904894, AA515051, AI579184, AI041368, AI818620, AI471374, AI951495, AI357551, AI003743, AI339850, F25203, AW264969, AI252085, AI557323, AW238016, AI252114, AW264973, AI041146, AI792903, AI792864, AI733957, AI038785, AI734002, AW130799, AI623720, AI890052, AW029038, AA641103, AI138265, AW169230, AI251002, AI433187, AI610159, AW080134, AI038279, AA179136, AI349874, AI521618, AA599021, F24284, AI110770, AI473943, AI298710, N71724, AW090811, AW3337985, AW338869, AW341892, T71998, AW419262, AI802556, AA715270, AI499503, AA482711, F18974, AI971188, AI471481, AA347927, AW088616, AC006237, AC005827, AC006137, AI031983, AC004816, AC005295, AC006412, AC004931, AC006299, Z98950, AP000354, AI134726, AC004019, Z85996, AC007320, AC004687, AI109628, AC005696, AF001552, AC004065, AC005632, AI049871, AI049775, AC004685, AF001054, AC007161, AC005815, AC005822, AF000292, AI008708, AC005164, AF039905, AC004451,
HLMIQ11	2659	921009	1 - 772	15 - 786	
HLMIQ72	2660	715650	1 - 358	15 - 372	
HLMIQ73	2661	764522	1 - 386	15 - 400	
HLMIQ83	2662	576657	1 - 310	15 - 324	
HLMIQ23	2663	916938	1 - 345	15 - 359	
HLMIQ40	2664	578756	1 - 433	15 - 447	
HLMIQ13	2665	924651	1 - 337	15 - 351	
HLMIQ56	2666	572430	1 - 256	15 - 270	
HLMIQ77	2667	572509	1 - 348	15 - 362	
HLMIQ77	2668	971141	1 - 298	15 - 312	

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HLMIS89	2670	572506	1 - 351	15 - 365	
HLMIT37	2671	799711	1 - 220	15 - 234	
HLMIT43	2672	799705	1 - 295	15 - 309	AI188748, and AI188321.
HLMIT76	2673	856860	1 - 358	15 - 372	T82950.
HLMIV09	2674	799740	1 - 391	15 - 405	
HLMIV07	2675	871698	1 - 280	15 - 294	U50537.
HLMIV89	2676	799753	1 - 187	15 - 201	
HLMIV90	2677	920464	1 - 310	15 - 324	AW051629
HLMIX61	2678	727730	1 - 693	15 - 707	AI332830, AI887069, AA883715, H43750, AF031077, AF031078, and AF030876.
HLMIX95	2679	960056	1 - 683	15 - 697	HI4342, AI333974, AW015007, AI565838, AW387096, AW387086, AW062872, AW178917,

HLMIV56	2680	571401	1-296	15-310	AL12052, and AB018336.
HLMIZ02	2681	920426	1-366	15-380	AL034408.
HLMIZ25	2682	825087	1-258	15-272	AL135476, and D63478.
HLMIZ40	2683	715586	1-241	15-255	
HLMIA05	2684	932173	1-363	15-377	
HLMIA30	2685	955980	1-345	15-359	AI002968, AI9002983, AA291228, D31488, AA324899, D31516, AI909121, AC004235, and AC004034.
HLMIA66	2686	799731	1-343	15-357	
HLMIA83	2687	712447	1-491	15-505	
HLMIB04	2688	968284	1-293	15-307	FI9459.
HLMIB23	2689	578827	1-309	15-323	
HLMIB60	2690	924974	1-341	15-335	AL042756.
HLMIC35	2691	576944	1-287	15-301	
HLMIC76	2692	770177	1-345	15-359	
HLMMA16	2693	576612	1-308	15-322	AC011504, 293930, AC006598, AF000247, AL049759, AI.020997, U95690, and AC005049.
HLMMA32	2694	920292	1-453	15-467	
HLMMA76	2695	799741	1-326	15-340	AI.023653.
HLMMA72	2696	760717	1-302	15-316	
HLMMD05	2697	932127	1-401	15-415	
HLMMD26	2698	799743	1-337	15-351	
HLMMD28	2699	959900	1-173	15-187	AC002400.
HLMMD89	2700	920442	1-149	15-163	
HLMME77	2701	710989	1-395	15-409	
HLMMEF24	2702	677303	1-498	15-512	W38578, AI476515, AW207177, AI6330843, AI340048, AI807826, AI440328, AI766156, AI7136049, AI990469, AI830815, AI951610, AI7139134, AI745414, AI620207, AI417731, AI479435, AI700511, AA342377, AW241823, AI7139388, AW439228, AI433438, AA935611, and AA872559.
HLMMF82	2703	571403	1-262	15-276	
HLMMG02	2704	920427	1-352	15-366	AC006274.
HLMMG23	2705	881361	1-331	15-345	
HLMMH18	2706	666575	1-421	15-435	AC007690.
HLMMH86	2707	678672	1-331	15-345	M63543, and M63544.
HLMMH08	2708	959630	1-427	15-441	AI685869, AD000812, and AC002126.
HLMMJ37	2709	577571	1-354	15-368	
HLMMK28	2710	577670	1-447	15-461	

HLMMK39	2711	576167	1 - 303	15 - 317	AA400917, AA652249, AC005069, AL133216, AC006213, and AL021307.
HLMMN01	2712	657354	1 - 264	15 - 278	AI792650, and AP001065.
HLMMN32	2713	576180	1 - 430	15 - 444	AA299728, AI336771, T08386, H58891, AA487512, AA579399, AW408767, AA846482, AI890283, AC006538, AC004967, AL022328, Z93930, AC004983, AL132987, U91323, AC004776, AC005988, AC005308, Z98304, AL034548, AF222686, Z86061, AC007685, AP001067, AC002448, AC005342, A101930, AB020863, AC004890, AC005157, AP000046, AP000114, AC002492, AL049856, AL109618, AC007687, AF205588, AL020995, AP000317, AP000119, AP000051, AP000166, Z99128, AC005015, AC006960, and AC004921.
HLMMN91	2714	795915	1 - 387	15 - 401	
HLMMO61	2715	740655	1 - 272	15 - 286	
HLMP25	2716	576166	1 - 326	15 - 340	AI394634.
HLMP68	2717	799715	1 - 351	15 - 365	AF008203.
HLMP69	2718	754221	1 - 294	15 - 308	
HLMP75	2719	876036	1 - 323	15 - 337	H00150, and T20044.
HLMP88	2720	795125	1 - 671	15 - 685	
HLMPR20	2721	799720	1 - 432	15 - 446	
HLMPR39	2722	711503	1 - 271	15 - 285	AP000331, AP000172, AP000057, AP000125, and Y17293.
HLMPR45	2723	799771	1 - 434	15 - 448	NG2666, AA857377, AA205304, AI762045, AL022328, AC006312, AP000502, AL022326, AL034548, AL034423, AF134726, AC005668, AC005488, AC006044, and AC007537.
					AI249526, N52227, AI963514, AA404287, AA401240, AA287872, AA494038, AA700351, AA704781, AA490908, AA420998, AA421078, F32710, AI241835, AA236867, AA237066, AA188992, AC007371, AP000354, AL096701, AC005668, AC005254, AC006285, AL035587, AL121653, AL008721, AC007686, AF001550, AC002470, AL049776, AC004890, AL024498, AL117258, AC004814, AC005839, AL122020, Z98051, AC005820, Z85987, AP000557, AC005480, AF194970, AC003101, AC005578, U62293, AC005921, AL049759, AL133163, AL008729, AL008582, AP000556, AC004694, AC005702, AC005057, AL096712, AC006561, AL121769, AC004796, AL020993, AC005225, AC007308, AC004883, AC005920, AC006017, Z68276, AL022313, AC004019, AL080243, AL022163, AC004983, AC006322, AC007878, AL109653, AL035438, AL109798, AC005500, AL022328, AC005291, AP000512, AB023049, AC004231, AC0016025, AC005332, AC002422, AC005387, AF129756, AC005726, U95090, AC005082, AL121694, AC006271, AC005280, AL022318, AC004103, AC002395, AL031055, AC008012, AL023799, Z46936, AC005755, Z85986, AC007731, AC007011, AC005288, and AC002522.
HLMMT08	2724	959578	1 - 672	15 - 686	W90795.
HLMMT22	2725	799737	1 - 416	15 - 430	
HLMMT72	2726	799719	1 - 323	15 - 337	AF111170.
HLMMT74	2727	506234	1 - 353	15 - 367	

HLMM76	2728	578143	1 - 296	15 - 310	T90204, and AA658177.
HLMM76	2729	424663	1 - 289	15 - 303	W87501, AL138252, AL021938, U52112, AC004802, AC000091, AC005258, AC005519, X63735,
HLMM76	2730	799718	1 - 447	15 - 461	AC006430, AC002477, AC005264, X78262, AC008041, AC004463, AL034548, AB022785, AC005377, and AL035414.
HLMM76	2731	463919	1 - 544	15 - 558	AA490121, and AA668334.
HLMM76	2732	799706	1 - 441	15 - 455	AC004983, and AC003043.
HLMM76	2733	926188	1 - 436	15 - 450	AL021541, AL080837, AL192451, AL054048, T29020, AW084519, AA614014, AW271140, AW207518, AA525796, and D30758.
HLMM76	2734	935621	1 - 259	15 - 273	
HLMM76	2735	953833	1 - 343	15 - 357	AC002302.
HLMM76	2736	577160	1 - 293	15 - 307	
HLMM76	2737	702478	1 - 270	15 - 284	U63312.
HLMM76	2738	577153	1 - 341	15 - 355	AC002313, and AC002111.
HLMM76	2739	716797	1 - 372	15 - 386	AA604843, H83509, AW069227, AA664604, F33893, AA878140, AL079294, AA604865, AW302048, AL1689019, AL179871, AW438616, R92640, AW103383, AL171418, AL275183, AL634187, H79633, AL157313, AL002261, AA448838, AA574442, AA508873, AA613754, H53894, R95748, AL307201, AA311071, AA357987, R83385, AW189068, AA812058, AA613754, H53894, AW402145, AL754291, AA602458, AA528390, T03412, AL124798, R96643, AA393830, AA350886, AL939442, AL062030, AL289962, AA668587, AA558003, AL571543, F79541, AL963866, AL669102, AA488419, W45215, AW275953, AA488620, AA508578, AL500453, AL832865, AL708005, AA832145, AA599495, AL173701, AL279759, AA662974, AW088038, AW238016, AL627581, AL609223, AA721235, R32162, AL292236, N67387, AA457771, R59868, AA302970, AA610509, AL190505, AW072923, AA309287, AA706209, AA601986, AA599352, AL569510, AL189353, F03525, AA461308, AA744036, AA904137, AA669647, AA599352, AL569510, F17858, AA492298, AA513141, AC002312, AL049779, AL031291, AC006441, AL131757, AC016026, AF207550, AC007878, AL050318, AL008723, AC007243, AC004383, AF111168, AC007386, AP001054, AC005046, AL031602, AC000379, AL133448, AC004230, AL031447, AL031597, AC005911, AC004149, AC005908, AL049843, AL022324, AC003037, AF001549, AL035258, AC003003, AC006965, AP000346, AC006515, AL031591, AC007051, AC007032, AC005004, AP000553, AP000347, AL049872, AL031595, AL079305, AF178030, AL035420, AL078624, AC002336, AP064658, AC007845, U96629, AC006285, AC004453, AC007057,

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HLMW5 5	2740	815997	1 - 215	15 - 229	H59334.
HLMW7 1	2741	761346	1 - 239	15 - 253	AA300028, and AA299804.
HLMW7 7	2742	577150	1 - 290	15 - 304	
HLMWX19	2743	861317	1 - 580	15 - 594	AA630476, AT079998, AB60521, AL117403, AW403177, AL036896, AA382050, AA433932, AL121039, AT020049, AW020094, AA326342, AA425283, AL355246, AW265468, AL572680, AW419201, AA491941, AW410409, AW021399, AS147110, AA631915, AW146994, AB19419, AA084439, AL252005, AL254463, AA601376, AA199578, AB13920, AW023975, AD065031, AT798521, AA809125, AL570067, AW243817, AA493546, AL114543, AA640305, AW108844, AL150934, AA133568, AA199582, AT732690, AL39525, AL567676, AL242236, AA167656, AA524604, AL003068, AT753904, AA814719, N27362, AA598608, AL064968, AA632355, AT744963, T34066, AL568376, AB89236, AW104161, AL052366, AL899177, AW085626, AA55232, AA533066, AA557945, AT02018, AL343986, AT01898, AA601712, AL704740, AT745666, AW007420, AW069273, AW151247, AA593168, AL044966, AL445768, H53546,

				AW182182, AA551105, AL148618, AL031759, AL285651, AA524800, AL040051, AF075913, M77888, AA600127, AL760835, AA533040, F23338, AA482725, AA493245, AL312614, AL037910, AL073520, AW192930, AL311796, AA525753, AL925588, AA421536, AL308529, AL003147, AC005730, AC002310, AL079342, AC007367, AL049869, AC005484, AF000512, AL049694, AC005619, AF129756, Z98742, AC005921, AC006597, AC004796, AC004150, AC005071, AC005696, AC004659, AP000552, AC005412, AP000504, AF005588, AF111168, AC004997, L44140, AC005585, AC005602, AC002314, AC005971, Z97054, AL020995, AC006511, AL022721, AL080286, AC006011, AC002091, AC004922, AC005082, AC005828, AC005632, AL022316, AC004895, AC018633, AL121658, AC008044, AC004967, AC005457, AC005529, AB017602, AC004895, AL022165, AL049697, AL031575, AC004477, AC004859, AP000499, AC004692, AC005365, Z84466, U91318, AC006530, AL080243, AF134726, Z83838, AC000025, AL031848, AC005041, AC012384, AF196779, AC007546, AL080317, AC005919, AL009181, AF165926, AP000952, AC007160, AF075069, AC003685, AC004999, AC002470, AC002404, AC005261, AC005876, AC005746, AB026898, AC008372, AL133448, AL080250, AL121652, Z97630, AC006121, AE000638, AC005046, AC005913, AC002366, AC006080, AL133243, AC005193, AC006509, AP000346, AL049830, AF053356, AL031668, AF060568, AC005037, Z83844, AC005524, AC004805, AC002349, AP000503, AC005280, AL117337, AC004686, AL031666, AL133304, AC005519, AC005599, AL133289, AC004703, AC007421, Z95930, AL044420, AC005754, AC005695, Z84469, AD000671, AC007371, AF053587, AL024474, AC006088, AC006544, AL035445, AL021154, AC002364, AC004552, AC005410, Z95244, AF001548, AL049795, AC002996, AC003665, AC004084, AL022149, AL034402, AC005479, AL079295, AC006211, AC006512, AL031433, AL133163, AC005740, AL022163, AC006581, U52112, AC002126, AC007899, AC005387, AL008582, AC004821, AF038458, AC007390, AC004893, AC007842, AC005231, AL136504, U91327, AL031311, AC007564, AC003982, L47225, AC005666, AC002312, AC003007, U80017, AC005755, AC005089, AC006312, AL031657, AC005881, AC007566, AL121655, AP000553, AC006515, AC007510, AC006449, AC005081, AC005856, AC004814, AC007381, Z84474, AC004223, AC004082, AC005317, AC007192, AL117258, AC002551, AC006241, AP000365, AL117330, AC004228, AC007226, AC004125, AP000547, AC003991, U78027, Z77249, AC004969, AC012099, AL031427, AL031290, AC005393, AC007124, AL050324, AC004797, AL136130, AC005232, AC005031, AC006116, AL121754, AL049764, AL031678, AL031680, AC002120, AC002506, AC005694, L47226, L47224, AC004752, AL035659, AF196969, AC004804, AL120233, AL000091, AL121657, AC003025, AC005015, AL034417, AL022323, AC005822, L78810, AL136295, AC006960, AL132712, AP000556, AC007227, AL034343, AL049777, AC004783, and AC006946.
HILMXX57	2744	724985	1 - 375	15 - 389
HILMXX72	2745	760651	1 - 221	15 - 235
				W73175, W73147, and AF06335.

HLMMX73	2746	764455	1 - 334	15 - 348	AW020095, AI358885, AI686576, N22276, AI859693, AA810985, AW161402, AI811192, AA420722, AI440238, AI334893, AI340604, AI345639, AI449960, AI310930, R80916, AI345745, AI371163, AI348995, F35534, AW084447, AI363495, AA761079, AI254457, AI312993, AW021059, AI680194, AI345014, AI520964, AI624138, AI002285, AI440397, AW089379, AI348895, AI045672, AI758538, AI567582, AI307520, AI345026, AI307454, AI352363, AI345562, AI040664, AI015092, AI345817, AI288076, AI344808, AI345739, AI345674, AI671642, AW021189, AI312143, AI349637, AI312168, AI344843, AI334970, AW071276, AI344779, AI310927, AI307515, AI007578, AI336488, M85164, AI133640, AI137479, Y10655, AI122093, AI050116, AF033827, AI137267, AI049276, AI117435, AF175903, U79457, AB007812, Y09915, AI122110, AI117575, AI117438, AI022283, I52013, AI049426, AI137465, AI137641, AI110280, AB016226, AF118090, AI117457, AI136842, AF201468, AI137262, U89295, AF145233, I33391, AF069506, AI137258, AF042856, E13052, U53505, and AI110269.
HLMMX85	2747	783429	1 - 192	15 - 206	AI050812, AI827703, AI827584, and AF127916.
HLMMY01	2748	916636	1 - 568	15 - 582	AI135357, AI064815, AA707879, AC006947, AC005399, AC005037, AC002563, AC005411, AC004148, AI024507, AC004106, AC002470, AI121652, Z83822, AC005338, AI096791, AC005031, AP000555, AC004998, AC007129, AC004491, AC006430, AC005921, AI022320, AI096763, AI031680, AC006271, U80017, AC005300, AC005666, AI049779, AC005180, AC007685, AI031311, AI031643, AF200465, AF111169, AI121578, AC007773, AC007263, AC006441, AC006946, AI021154, AC006966, AC007649, AC006515, AI022312, AB003151, AF139813, AI133353, Z83844, AC005179, U52111, AC005821, AC003684, AC005332, AC002045, AC002430, AI009183, AP000044, AP000112, AI121655, U95742, AC005620, AC007066, U95743, AC007384, AB020868, AC004983, AP000690, AC007216, Z97876, AF024534, AC002330, AF111167, AC004499, and AC006014.
HLMMZ16	2751	927659	1 - 143	15 - 157	AI832562, AI115758, AI112944, and Z93784.
HLMNA14	2752	918207	1 - 680	15 - 694	AW007018, AI797782, AI082366, AI040621, AI961043, AI568510, AI479909, AW243347, AW005434, AW02053, AW205104, AI950423, AA220947, AI824907, AW136734, AA932943, AA227014, AI937632, AI654366, AI968787, AW137409, AW136138, AW136726, AA126260, AI392819, AI420238, AI656029, AI420881, AW051726, AI199430, AI767282, AI206270, AI700009, AI245711, AI738987, AI738427, AI860164, AW302243, AI936399, AA888132, AI805239, AI738749, AI474889, AW197199, AA218581, AI568827, AI382249, AA662157, AA398373, AA887699, AA582927, AI276364, T85626, AI878821, AI684228, and AI498040.
HLMNA84	2753	577572	1 - 725	15 - 739	AI554874, AA228131, AI227984, AW377797, AI227774, and AA227773.
HLMNA88	2754	856809	1 - 428	15 - 442	AA935028, AW002831, AI507814, AI186438, T06210, AA592584, AA558404, AA303055, T94140, AW104163, AI870453, AA565135, AI772906, AI668291, AA225406, AW272294,

		H65824, A4452836, A1587467, AA713705, AA599712, AA779783, A1E69580, AA484164, AA831903, A4121731, AL048002, A1635028, AA224593, AA720582, A1274011, A15927451, AA508036, AA525293, R646717, AL134332, A1B60751, A1923458, A1918419, A1807372, T10586, T56727, AA515138, AA487569, AA516320, AA747234, H71678, AC006965, AC004865, AC005291, AC007130, AL118510, AC004778, AL031672, AL008718, Z97355, AC010205, AL109627, AC004491, AC006120, AL135744, AL035685, AL035458, AL035405, AL031121, AL027327, AF005555, Z84484, AC003013, AC004836, US2112, AC005274, AL033517, AC006960, AFZ05588, AC002300, AC005696, AL050321, AL022320, AL035410, Z95115, AC004106, AC006312, AC005015, AL009181, AL049779, AC006013, AC005049, Z99127, AC007686, AF000556, AF000556, AC006449, AL034420, Z93020, AF000884, AL0035400, AL049539, AF006455, AC002429, AF001548, AC002476, AC006121, AC008372, AC004086, AC006479, AC000025, AC005280, AC008273, AC002312, AF109907, AC004098, AC011311, AC004000, AC007687, AC006165, AB023051, AF000512, AC008249, AC007199, AC005002, AL031643, AF001550, AC005409, AL034351, Z98304, AC004605, AC007016, Z85987, U82828, Z38347, AL049843, AL034400, Z95116, AF000696, AC003010, AC005529, AC005921, U80071, L73810, AF000288, Z82097, AC005563, AC005784, AC006071, AF000109, AC003104, AL008635, AL035419, AL049759, AC004881, AC007041, AL031594, AL080243, AC004913, AF000256, AC006254, AF053356, AL117339, Z98946, AC004020, AL031389, AC005225, AC006946, AL035699, AC003041, AC007934, AC005288, AC018633, AC005180, AC005037, AL109758, AC004933, AC008085, AC003029, AF000098, AP000692, AC004859, AL031685, AC002456, AC002369, AC003108, Z94721, Z98048, AC004209, AL031283, AP000008, AC007371, AL009172, AL003962, AP000704, AC016027, AC003571, Z38338, AC016830, Z93023, AF196779, AL035658, Z93017, AL022319, AC004167, AC003663, AL066774, Y14768, AC004998, AL136504, Z98050, AC006487, D42052, AC004531, AL034561, AP000505, Y08837, AC005913, AF000466, U95739, AC005368, AL035417, AF035587, AC004656, AC004031, AL031279, AL049748, Z82174, AC003967, AL225782, AL109852, AF000243, AL050841, AC007129, AC004743, AL034551, AF159056, AC003667, Z97989, AL133353, AC005618, AC005736, AL035587, AC007011, U95305, AC005043, AC004890, AC004216, AP000495, AL139054, AL031767, Z97056, AC005837, AC004647, AC007842, AL034553, AB014077, AL117337, U89335, AP000041, AL035078, AL031846, AC004242, AC000353, AC005822, AL022323, AF003626, and AC003025.		
		AL135666.		
HLMNIA91	2755	765862	1 - 434	15 - 448
HLMINB08	2756	959559	1 - 348	15 - 362
HLMINB94	2757	575838	1 - 259	15 - 259
HLMINB84	2758	760695	1 - 348	15 - 362
HLMING08	2759	876147	1 - 902	15 - 916
		AA732794, A1821335, A1379196, AA486273, AA486272, A1734181, AA228776, A1821049, T64007, A1865113, and T54086.		



HLMNG68	2760	921008	1 - 328	15 - 342	H01560, and A034373.
HLMNH23	2761	787043	1 - 419	15 - 433	
HLMNH25	2762	575921	1 - 393	15 - 407	
HLMNH37	2763	920361	1 - 357	15 - 371	W92492, and T80433.
HLMNI69	2764	531356	1 - 224	15 - 238	
HLMNI.01	2765	835623	1 - 256	15 - 270	AC003111, and AC004798.
HLMNL06	2766	935626	1 - 456	15 - 470	L44341, A2283762, A2325204, A2282978, A150394, A1460103, A130647, F19258, AA601492, A1679379, A1679888, H54443, AA079421, H55779, A172908, A1364488, F13749, AA467730, AA847099, AA603323, A135643, H84359, H62778, A1751162, A17162, A1616228, A1124660, AA878149, A1696793, A1047317, A1537185, AA078677, AA443065, N55337, AA714140, A1025517, A1709066, A225155, AA658235, A1689019, A17276435, A1193694, AA947837, AA554293, AA482757, A1138344, AA526514, C06471, A1867044, AA654627, A1039187, H69388, Z30128, F29989, R54896, A1286264, AA650244, AA776971, AA772016, AW238127, AA385100, A1358229, AW406755, A1667877, A157005, A1365988, A1028510, AA310218, AA558697, A2399601, AW003434, A1610603, A17339687, A1801591, A1914913, A1635272, A2021552, A1499503, A558269, N87410, AA826144, AA243452, A2321719, AA310158, AA496901, W38648, A101218, AA482788, A1287528, N43757, A1040462, D50653, AA077952, AA252763, AA516207, H68112, A1041368, A17271917, AA450199, AA577748, A1345522, A1357551, AA569202, A134844, A1287787, A1561335, A1907884, A1913017, A1119438, A1149915, A1921649, A1378729, AA282696, AW304531, A228329, A1005529, AC004854, A1096701, AC003035, A1035400, AC007688, A1109984, AC006283, AC002430, AC016025, AC007384, AC006273, AC005086, A1033539, AC005089, AC005527, AC000025, AC005288, A121694, AC002991, AC005971, AC004794, AC000076, AC005399, AC005839, AC018769, A148319, AC006996, A1031577, AC005531, AC004098, A117258, AC004531, AC004386, A109827, AP000502, A1021808, A1021707, AC006449, AC002480, AC006476, AF196779, A1021546, A1049757, AC007546, AC005062, AC007021, AF128893, A1031281, AC006013, AD000090, A1034349, A1050325, A1031885, A1034420, A1133382, Z86990, AC006509, AB017654, AC004076, AC005041, A1050541, A1080242, AP000692, Z83649, AC009501, AC005284, AC003046, L78833, AC005324, AC006012, AC006033, A1132642, AF053336, AC004622, A1031255, AC005932, AB003151, AC007199, U52112, AC002418, AC004966, L78810, A1035415, AC005932, AB003151, AC007199, U52112, AC002418, A1080243, AC005696, Z82198, AC006501, AC006130, AC008101, AC004916, AP000459, AC007226, A1096763, A1133371, AC007845, AC005914, A1049539, AC004596, AB023052, A1023513, AC007216, A1031650, AC004019, AC000015, A1034419, AC005746, A1132712, A1031280, AC010205, A1022237, A1034423, AC008079, A1049795, AC006064, AC004236, AC005409, AC004913, AP000128, AP000206, AC010197, AC007878, AC006511, U73168, AC003958, AC005940, A1034429, A1008629, AC005776, AC000134, A1035407, A1034491,

HLMLN08	2767	839948	1 - 402	15 - 416	AC004975, AP000215, Z93783, AC004895, AC002554, AC005049, AC002116, AC005837, AC004099, AC005225, AL022721, AP000474, AC002476, AC007030, AC012599, AC002336, AC005786, AC003667, Z84480, AP000704, Z83822, AP001051, AC005019, AC002565, AL023803, AC002316, AC006111, AC002470, AC004534, AC002064, AC005193, AC003527, AC002485, AL049788, AL133304, AL031848, AL024498, AF107885, AC006530, AC005209, AL034417, AC0004152, AF027390, AC000021, AC000022, AF164343, AC003353, AC0020663, AC007707, U62317, Z85987, AC004542, AC002350, AC005944, AC007327, AL110114, AL110502, AL023807, AC004478, AF030453, AC005498, AC007228, AC005536, AL049779, AC005879, AC006041, AL034350, AL035681, AC002984, AC006055, and AL031053.
HLMLN108	2767	839948	1 - 402	15 - 416	AW291682, and AW084373.
HLMLN123	2768	675970	1 - 323	15 - 337	
HLMLN155	2769	964739	1 - 268	15 - 282	
HLMLN157	2770	575900	1 - 132	15 - 146	
HLMLN164	2771	578627	1 - 296	15 - 310	AW237905, AL279417, AL137946, AW327852, H93152, N59744, AL284543, AP033111, AP015081, AL284092, T56025, T08386, H79586, AT798313, AA807579, R83068, AA584884, AL251944, AL890862, AL524022, AL121130, AL251034, AA878407, AA010973, AA302978, AL10337, AL280574, AL61090, AW128881, AL859906, AL358712, AL421950, AL884861, AA610255, AA65980, AL859438, AW410481, AL046416, AW026305, T07225, AA378474, AA834764, AW188791, AL254770, AL254508, AA372736, AL188049, AW090629, R49266, AA683091, AA350406, AA371410, R88803, AA215585, AW247389, AA047849, AA636102, N47855, AW132097, N52323, N33851, AL914713, AW265688, AL254798, AA343894, AC004099, AP000301, AF039906, AC005046, AL008718, AP000208, AC005188, AP000247, AJ246003, AC004841, AC012085, AP000045, AP000555, AB000658, AC004185, AF001548, AC004451, AL109827, Z98752, AC004491, AC003957, AP000509, AC004821, U85195, AP000692, AC006088, AL121653, D84394, AL096702, AL035072, AC006323, AC004777, AP000556, AF109907, Z82190, AC005409, AL023513, AC004770, Z98200, AL022396, AC004228, AC002045, AC006948, AL035461, AL031985, AC003692, AC004858, Z75887, AC000057, AL050343, AC0004814, AC005317, AL121658, Z97056, AC002404, AC002336, AC004477, U91323, AC003280, AC006953, AC005288, AF015720, U80017, AC005588, AC018725, X51956, AL008383, Z84466, AC007953, AC007228, AC000085, AF196969, AC002039, AC004656, AD000092, AC004409, AC005378, Z83840, AC005740, AL031281, AL049576, AL133246, AL020997, AL033086, AC002369, AC004999, AC005156, AL109963, AC005067, AC006511, AC004129, AC004796, U91318, AL009031, AL022238, AL021879, AP000553, AC002476, AC005484, AL023807, AC007376, AL031622, U93305, AC005538, AL133382, AC005924, AC005089, AC009516, AC002477, AL049780, AC003956, AC007450, AC007214, AC006441, AL117330, Z83826, AC004983, AC006958, AJ229041, AL050348, AL031594, Z93020, AC007157, AC005095, AC006040, AF031076, AL034418, AC002551, AC005180, AC006312,

HLMMN19	2772	668746	1 - 428		AF217403, AL009051, AC007899, AC006537, AL080317, AL034423, AC009247, AF030453, AL024493, AC006059, AC005274, AC004623, AL031589, AC004844, AC002316, AC007934, AC004583, AC004706, AL080243, AC007066, AL021393, AF000130, AC003026, AL009172, AL008639, AC005972, AC009248, Z82215, AC005037, Z98949, AL049843, AC004583, AC006538, AC005772, AC006947, AL031659, AC004383, AF000065, AC005213, AC004884, AF111168, AC004950, AL049871, AC008372, AC004097, AF000316, AP006096, AL049830, AL049793, AC005102, AL022327, U95740, AC005881, AC006362, AC004804, AC007406, AC006241, AL049759, AC007381, AC005233, AC007666, AC004629, AF003626, AL035681, AC002381, AC004386, AC002994, AC005726, AC004854, AC005291, AC006468, AC002425, AL035659, AC006000, AC005391, Z93023, AC005088, AC004859, AL022476, AC007308, AP000103, AC006160, AC012627, AC006277, AP000359, AC004967, Z83844, and AC004526.
HLMMN39	2773	577649	1 - 437		AC007240, AB000876, AC004181, Y14768, AP000505, AB000882, and AC006011.
HLMMN44	2774	577106	1 - 187		AA532744
HLMMN461	2775	575889	1 - 342		R44592, AL284595, AA572975, AA017690, H71585, AA744272, AL611440, AA515224, AA743966, AB59469, AA243452, NZ5037, AA601270, AA807579, AL56264, AL040051, W275674, AL033518, AC004787, AC003081, AC002395, AP000130, AF196779, AP000247, Z83840, AF130343, AC004150, AC001228, Z95115, AC006021, Z97876, AC005696, U95743, AL117694, AC004890, AC006484, AC006512, AL096791, U97924, AL034420, AC005899, AC003037, AL022238, AL109827, AL022316, AC006539, AL049757, AC002544, AC012083, AC002059, AC005874, AF134471, AL132712, AP000553, AC006023, AC009516, AC005353, AC006239, AC005081, AC004963, AL135745, AC012384, AF001548, AF106656, AF053356, U07563, AP000475, AC007666, AL121638, AL121653, AC020663, AC007114, AP000008, AL133448, AC005370, AC004079, AC000026, AC007011, AC005233, AC005488, Z82203, Z85986, L48038, AC007055, AL135783, AL035659, AC004859, AC004821, AC007156, AL096701, AC006146, AL031681, AC005064, AC004955, U95742, AC004989, AC003015, AC004983, AF059675, AL022320, AC007193, AC004816, AF001550, AF190465, AC016025, AC006380, AC004258, AC004895, AC003662, AL021546, AC005330, AC004909, AC005399, AC005157, AP000501, AC005952, AC005015, AL008582, AC004583, AC005668, AC002070, AC005786, AC004885, AC002477, AC008123, Z81450, AC004643, AL050318, Z93783, AC006261, AC004013, AL117352, AL022326, L29766, AC005841, AP000472, AC005971, AC007216, AC005755, AC004408, AC004662, AC005225, AC004655, AF019413, AC0060978, AL031594, AB023054, AF111168, AC005484, AC005202, AC005291, AC004921, AC006014, AC005180, AF165926, AF000031, AF064861, U91326, AC003689, AC006948, AC006042, AC007686, Z86090, AC006480, AL035451, AC008372, AC005562, Z93018, AC005837, and AL021977.

HLNN02	2776	920296	1 - 387	15 - 401	AA077367, AA678404, AA631482, H11448, AL018726, AW075863, AL439045, AA627180, AW080061, H57324, AA767864, AA078725, AA809049, A1751049, AA613450, AL821659, AA643451, AA806116, F24531, AE690762, AL690497, AA558404, AA657910, AT732243, AA603432, AL903464, AW084152, C05882, AA838162, AA774006, AL537814, AA706845, AA429481, F31203, H69179, AA658018, AW409692, AA507526, AW069227, AA640252, AW074839, R33826, AL694178, AA683154, AA372881, AL251576, AL634187, AA720750, AA985145, AW117831, AA728890, AL306232, AA482786, AL457313, T98651, AL139302, AL583466, M60806, AC007725, AC005412, AC006050, AF042084, AC000050, AL031681, AL022336, AC009363, AF111167, AC008008, AL023575, Z82976, AC005245, AF031077, AC004132, AR06471, AC005295, AL031427, AC007205, AC004975, AC005839, AL079301, AL031602, AC004662, AC007227, AL251973, AC005006, U65406, AC004836, AC009247, AL096791, AC005231, AC002040, Z67997, AC007421, AL022166, Z83820, AC006312, U29953, AC004396, AC004134, AC004983, AC008119, AC009399, AC005740, Z68226, AC004878, AL049697, AC002550, AC004143, AC003109, AL021368, AC005355, A1006698, AL133241, AL121769, AC004019, AC006480, AP000967, AL031670, AC007676, AL021937, AC004962, AF200465, AC005399, AC008012, AC018725, AC006512, Z82097, AC004967, AL008734, AC005902, AC006597, AL009182, AC004016, AC004796, AC003964, AP000547, AL009181, AC005747, AC006581, AC007040, AC007312, Z93023, AC005615, AC002036, AL078581, AL022098, Z83986, AC005670, AP000354, AC006014, AC005514, Z82198, AC005895, AB028660, AL031735, AC005089, AC006112, Z82172, AL132777, AL049874, Z85988, AC005071, AC006211, AL049651, AF000223, AC004447, AF170815, AC004007, AL049557, AC005687, AC007993, AC007968, AC004492, AC004030, AC006084, AC005838, AL000219, D89927, AC002400, U02047, Z92542, AC004535, AL031588, AC003686, Z81450, AC004820, AC004652, AC006505, U91321, U95740, AB023309, AL033547, AC006388, AC005202, AF121781, U73169, AC006213, AP000228, S83170, AF196969, AF031075, AC006160, AC004528, Z95116, AL035079, AL022316, M37468, AC005863, AC005548, Y11107, AC004798, AL096755, AP000140, AC005488, AL078583, AC005924, AL031053, AL021878, U52112, AC006205, AC007435, Z69667, AC004589, AC002310, U63630, AF146367, Z99755, AC003104, AF124523, AC008928, AL049795, Z97056, AC004896, AL035045, AC006208, AC006441, AC003070, AP000088, AP000513, AL117344, AD000092, AF001552, U51022, AC007899, S77164, AP000694, AC004485, AP001549, AC005036, AC005621, AL049861, AC009248,
HLNN03	2777	968377	1 - 539	15 - 553	AA669135, AL659433, AA744875, AL418094, and N86865.
HLNNQ35	2778	575906	1 - 339	15 - 353	AA115833.
HLNNQ35	2779	752366	1 - 290	15 - 304	
HLNNQ35	2780	745733	1 - 240	15 - 254	
HLNNQ35	2781	577693	1 - 443	15 - 457	
HLNNQ35	2782	577157	1 - 382	15 - 396	

					AC005829, AC005694, AL121825, AC002978, Z82188, AL022318, AC007226, AF030876, Z82245, AC002492, U73647, AC007229, AC002389, AC004253, AC004099, AL040936, AL024498, AC005387, AL080242, Z81365, AC005793, AF193805, Z84466, AB015555, AL008582, AF050154, AF036405, AL033382, AL035249, AC005180, AP000403, and AC002549, AC005786.
HLMNW96	2783	799745	1 - 303	15 - 317	
HLMNX15	2784	660316	1 - 283	15 - 297	
HLMNX33	2785	702477	1 - 409	15 - 423	
HLMNX74	2786	765800	1 - 390	15 - 404	
HLNSF63	2787	509519	1 - 373	15 - 387	
HLNSG27	2788	684650	1 - 445	15 - 459	
HLNTAA66	2789	503025	1 - 296	15 - 310	
HLTAA94	2790	503019	1 - 263	15 - 277	
HLTAI12	2791	971523	1 - 880	15 - 894	
					N62681, AW294240, H52686, AA084683, R000069, H73623, R97012, and AC004263.
					AA360344, and N43168.
					AA360440, and AA360442.
					AA902933, AA041224, AL078764, AA252233, AL173074, AV389244, AL141267, AL18278, H48161, AA235335, R76651, AL243996, AA360624, H49948, AA234675, R55221, AA011520, AA361876, AW021446, N63621, and R55222.
					AA360647, and AA361867.
HLTAI56	2792	960750	1 - 305	15 - 319	
HLTAI59	2793	508603	1 - 294	15 - 308	
HLTAI67	2794	578467	1 - 325	15 - 339	
HLTAI90	2795	524360	1 - 507	15 - 521	
					AA360930, T50676, F35684, AA302978, AA652868, AA878140, AA604550, AL912401, AA568204, AA570740, AA483606, AL136353, AL583142, AA846923, AA643770, AL362442, AA302661, AA297006, AW304699, AA507498, H84412, AL185394, AC002470, AC005529, AF001552, AC005324, AC005280, AF109907, AP001134, AL035400, AC004966, Z98304, AC005520, AC008072, AC002492, AC007308, AL049569, AC005081, Y18000, AF001052, AC006530, AL133246, Z95152, AC004838, AC002480, AC005821, AC003080, AC007327, AC005516, AC003982, Z97053, U91326, Z99127, AL050312, AC004383, AC012384, AL022316, AL031321, U96629, AC005913, AL030348, AL031230, AP000208, AC007051, AF053356, AL035405, AF088219, AP000503, AF134726, AC004531, AC004796, AC002429, AC004692, AC006001, AL049776, AF196971, AF038458, AL049759, AC005730, AC005874, AF134471, AP000212, AF030453, AC004622, AC000333, AC006261, AL050318, AL022313, AC006111, AL021453, AL049538, Z98884, L44140, AC004263, AC005180, AL096791, AC008273, AC004253, Z98048, AL023803, AC007686, AL022320, AC007637, AF111168, AC006040, AF111169, AL139054, AC005839, AL031291, AC007993, AL031295, AC009516, AC005755, AC004805, AC005231, AC007225, AB001523, AC002558, AP000113, AC005089, AC005822, AL022165, AC005041, AC007204, AF000088, AC006539, AF196970, AC003101, AL121603, AL022311, AL035086, AC007151, AP000359, AC005360, AL096701, AL049872, AF047825, AL034351, AC005189, AL034549, AC004644, Z83822, AC002565, Z93017, AC004854.

HLTA722	2796	508592	1 - 314	15 - 328	AC004098, AP000228, AC006597, AC004668, AC020663, AC005488, AL031680, AC004876, AC009044, AC000134, AL031432, AL022067, AC005412, AC004542, AC004491, AC007664, AC002094, AC006026, AC007371, AC005086, AC004526, AC002072, AC002477, AC004851, AL049780, AP000140, AC002544, AC004859, AP000350, AC004382, AC006312, AC008115, AC005625, AC005914, AC006480, AC004964, AB020868, AC004882, AF024533, D87675, AF196779, AP000298, AC006064, AL049843, AL022336, Z83844, AL096678, AC002425, AC006088, AL031279, AP039906, AC002997, AC008044, AL021155, I34294, AC003110, AC003663, AL117694, AC007676, AF196969, AC004584, AC006241, AC006388, AC005970, L78833, AC006101, Z98051, AC004797, J0031147, AC0072316, Z83826, AC004821, AC005082, AF030876, AL031685, AC005531, AC005844, AL034548, AL079342, AF000704, AC004150, AC007055, AC005736, AC007226, AC004752, AC006125, AC006305, AL022329, and AC006254.
HLTA723	2796	508592	1 - 314	15 - 328	AA360946, and AA361888.
HLTA724	2797	575133	1 - 360	15 - 374	AA360810.
HLTA725	2798	703103	1 - 337	15 - 351	AA361018, AA361017, R38095, AA322883, R57856, and AF023244.
HLTA726	2799	536674	1 - 289	15 - 303	AA361102, AL040178, AF039235, AA315994, AL16936, and AA358918.
HLTA727	2800	755707	1 - 585	15 - 599	AA361122, and AL033714.
HLTA728	2801	508925	1 - 494	15 - 508	AA361407.
HLTA729	2802	703295	1 - 452	15 - 466	AA361696, AC003026, AL09613, AL121653, AL109758, and AC005378.
HLTA730	2803	839804	1 - 345	15 - 359	AA361716, AA361734, C14792, C15837, C15309, C14683, C15809, and AC005670.
HLTA731	2804	928005	1 - 430	15 - 444	AC004956.
HLTA732	2805	522881	1 - 340	15 - 354	AA361990.
HLTA733	2806	856609	1 - 244	15 - 258	AA362009, AA339932, AA307975, AL921692, AA230221, AA610255, AL074006, AL567831, AL445768, AL340858, AA586553, AL89648, AL613487, AL336206, T08386, AA774119, AA470490, AA362440, F16409, R79396, A828613, AL434103, AW407007, AL24558, H01852, AL114645, AA358531, AA829693, AL038842, AA525238, AA112864, D25667, AA655037, AL134332, AA523718, AL744890, AL744381, R48980, AA661554, AW169469, AL157876, AL752977, AL543999, AA046906, AL46574, AA446931, AL636422, AA828840, R64110, AL729004, AL620354, AW338633, AL799683, AW070901, AA640661, AA657544, AL038841, AA510300, AL078143, AW028376, T16147, AA468289, AL732682, AL196287, AA4010265, AA654464, AC004922, AC003092, AL031118, AC002310, AC006088, AC005607, AC005003, AC006449, AC005520, AL049562, Z82246, AC005920, Z82182, AC003688, AC004674, AC004242, AC006001, AC005971, Z82203, Z99716, AC005924, AC005822, AB014532, AC008115, AL121653, AF196779, AC006441, AC005696, AL023807, AC009248, AL031295, AC004491, AL023118, AC005391, AL024498, L44140, AC007066, AC007934, AC007229, AC003037, AL031848, AC005598, AC007201, AC007314, Z98044, AC005747, AC005519, AC012627, AL035681, AL035587, AC002400, AC006160, AC005399, AL139654, AL031577,

HLTCU66	2807	1 - 404	15 - 418	AA845560.	AC005753, AL023880, 297056, AF111169, AL022316, AC004686, AL132992, AC004765, AL133448, AF088219, AC007376, AC005261, AR036572, U91328, AC005015, AC005753, AC004025, AC004019, AC000946, AC000386, AC005744, AL117329, AL109827, AC004913, AC005618, AL131168, AL031670, AC005785, AC005200, AC004816, AP000689, AC004832, AL022320, AL033411, 283820, AC005368, AP000533, AC005280, AC009516, 298048, AL080243, AP000514, AC000510, AC004263, AC005049, AC004262, AC003533, AF107885, AC000025, AC003029, AC000041, AC005911, AL049650, AL034451, AC004477, AL031575, AC003046, AC003102, AL049589, AC006511, AL031591, AB023048, AP000512, AC004568, AL136363, AB019438, AC006261, AL049761, AC002477, AC005225, AC009464, AC002456, L78810, U18270, AL023879, AC002991, AC006101, AC007537, 298749, AL008721, AP001549, AC005695, 274619, AC006659, 282198, AL049869, AP007704, AL097483, AC005365, L34079, AF038458, AC005011, AL133245, AC007686, AL031681, AF011889, U91318, AC004812, AL049781, AC004067, AC007308, AL009179, AC006130, AP000065, AC006121, AL080317, AC007421, AC007207, AP00210, AP000132, 296074, AL021154, AL020997, AC005914, 286090, AP000555, AL008382, AL002379, AC006251, AF243217, AC002533, AL122020, AC004893, AC004682, AC005531, U91323, AC003151, U913217, AL027067, AF001550, AC005013, AL109956, AC004876, AC002418, AL078638, AL034420, AC005755, 295114, AP000513, AC005527, AC004156, AF023436, AL031005, AC002369, AL110502, AC006162, AC007051, AF195658, AC004386, AC005993, AC003007, AC005632, AC003982, AL096791, AB023049, AC007919, AC002546, AC005099, 269374, AP000557, AL121595, AC004783, AC003086, AF109076, AL031666, AL031177, AC004051, AC007216, AC006538, AC005089, and AC005358.	
HLTCU67	2808	1 - 404	15 - 360	AA845560.	AC005753, AL023880, 297056, AF111169, AL022316, AC004686, AL132992, AC004765, AL133448, AF088219, AC007376, AC005261, AR036572, U91328, AC005015, AC005753, AC004025, AC004019, AC000946, AC000386, AC005744, AL117329, AL109827, AC004913, AC005618, AL131168, AL031670, AC005785, AC005200, AC004816, AP000689, AC004832, AL022320, AL033411, 283820, AC005368, AP000533, AC005280, AC009516, 298048, AL080243, AP000514, AC000510, AC004263, AC005049, AC004262, AC003533, AF107885, AC000025, AC003029, AC000041, AC005911, AL049650, AL034451, AC004477, AL031575, AC003046, AC003102, AL049589, AC006511, AL031591, AB023048, AP000512, AC004568, AL136363, AB019438, AC006261, AL049761, AC002477, AC005225, AC009464, AC002456, L78810, U18270, AL023879, AC002991, AC006101, AC007537, 298749, AL008721, AP001549, AC005695, 274619, AC006659, 282198, AL049869, AP007704, AL097483, AC005365, L34079, AF038458, AC005011, AL133245, AC007686, AL031681, AF011889, U91318, AC004812, AL049781, AC004067, AC007308, AL009179, AC006130, AP000065, AC006121, AL080317, AC007421, AC007207, AP00210, AP000132, 296074, AL021154, AL020997, AC005914, 286090, AP000555, AL008382, AL002379, AC006251, AF243217, AC002533, AL122020, AC004893, AC004682, AC005531, U91323, AC003151, U913217, AL027067, AF001550, AC005013, AL109956, AC004876, AC002418, AL078638, AL034420, AC005755, 295114, AP000513, AC005527, AC004156, AF023436, AL031005, AC002369, AL110502, AC006162, AC007051, AF195658, AC004386, AC005993, AC003007, AC005632, AC003982, AL096791, AB023049, AC007919, AC002546, AC005099, 269374, AP000557, AL121595, AC004783, AC003086, AF109076, AL031666, AL031177, AC004051, AC007216, AC006538, AC005089, and AC005358.	
HLTCU68	2812	625309	1 - 352	15 - 366	AW367467, and AB033038.	AC005753, AL023880, 297056, AF111169, AL022316, AC004686, AL132992, AC004765, AL133448, AF088219, AC007376, AC005261, AR036572, U91328, AC005015, AC005753, AC004025, AC004019, AC000946, AC000386, AC005744, AL117329, AL109827, AC004913, AC005618, AL131168, AL031670, AC005785, AC005200, AC004816, AP000689, AC004832, AL022320, AL033411, 283820, AC005368, AP000533, AC005280, AC009516, 298048, AL080243, AP000514, AC000510, AC004263, AC005049, AC004262, AC003533, AF107885, AC000025, AC003029, AC000041, AC005911, AL049650, AL034451, AC004477, AL031575, AC003046, AC003102, AL049589, AC006511, AL031591, AB023048, AP000512, AC004568, AL136363, AB019438, AC006261, AL049761, AC002477, AC005225, AC009464, AC002456, L78810, U18270, AL023879, AC002991, AC006101, AC007537, 298749, AL008721, AP001549, AC005695, 274619, AC006659, 282198, AL049869, AP007704, AL097483, AC005365, L34079, AF038458, AC005011, AL133245, AC007686, AL031681, AF011889, U91318, AC004812, AL049781, AC004067, AC007308, AL009179, AC006130, AP000065, AC006121, AL080317, AC007421, AC007207, AP00210, AP000132, 296074, AL021154, AL020997, AC005914, 286090, AP000555, AL008382, AL002379, AC006251, AF243217, AC002533, AL122020, AC004893, AC004682, AC005531, U91323, AC003151, U913217, AL027067, AF001550, AC005013, AL109956, AC004876, AC002418, AL078638, AL034420, AC005755, 295114, AP000513, AC005527, AC004156, AF023436, AL031005, AC002369, AL110502, AC00616

HLTDD44	2820	522698	1 - 146	15 - 160	AA362014, and AF053630.
HLTDD62	2821	571328	1 - 263	15 - 277	AL034343.
HLTDE78	2822	856603	1 - 293	15 - 307	
HLTDE54	2823	574714	1 - 302	15 - 316	AL096816.
HLTDK64	2824	772378	1 - 325	15 - 339	AA884484, and AC007068.
HLTDL71	2825	508932	1 - 242	15 - 256	AA361503, and Z90050.
HLTDL14	2826	973100	1 - 296	15 - 310	
HLTDY57	2827	934619	1 - 535	15 - 549	
HLTEA13	2828	971722	1 - 669	15 - 683	AF118078.
HLTEB40	2829	711453	1 - 221	15 - 235	AL094944, AA326452, AA135988, AA857812, AL799421, AA878407, N70449, AA831801, AL798041, AA714073, AA320105, AL19337, AL161090, AA302978, N23919, H93152, AA371410, CL4330, AA676829, AL021950, N75708, AW089550, AA832016, DS1877, H67064, AA279385, AL114557, AA017690, AA326904, AW068305, AA719111, AL133811, CL6358, AL194713, H43183, AA296604, AL270120, AW019964, AL866736, AL098508, AA029704, AW381198, AW381196, H79586, AA586433, H71738, AL054244, AL671077, AL431513, AA021139, AA381762, AA828867, R83068, AL609972, AL040430, AL580707, AW079809, AL583344, AL908525, AA828047, AL865776, AA558404, AA553570, AA338623, AL791718, AA862029, AA610235, AL192463, AW163763, AA336440, AA367788, AA569397, AL041375, AA077776, AL797998, AA102737, AA324088, AL283938, AL185394, AL1819391, AW390309, AW247389, AA854460, AL279417, AW265279, AA728861, AL538818, AA745543, AL889579, AL120976, AA385775, T60699, AA326330, AW265276, AA553900, AA563319, AA28778, AL152253, AL423018, AA834799, AL679413, AA487569, AL349130, AA608520, AA493789, AL445373, R67701, AL189705, T93109, AA937809, AA136477, AW002831, AL730488, AW008184, AA525331, AA502098, AL609574, AW340937, AL847413, AL7300749, AL745628, AA365980, AA658934, AA578474, AA805573, AA384911, AL696550, H91704, AL310670, AL074351, R03854, AL927393, AA593471, AA493447, AL118925, AL750125, U85195, AE000638, AF047825, AC005086, AP000350, AF038458, L34294, AL023807, AC002400, AC006011, AC005971, AC005484, AC006511, AL022721, AL031427, AC009247, Z98047, AC006344, AC004883, Z83845, AC007384, AP000704, Z97181, AC004707, AL022330, AC006449, AC004882, AL049843, AC002425, AC004905, AC018633, Z73359, AC006996, AC005215, AL121653, AL034420, AC004263, Z93930, AL133382, AP000008, AL1109592, AC004966, AP000504, AL031589, AL139054, AL049548, AC004881, D87675, AL100952, Z82206, AC007774, AL031230, AC005529, AF111168, AL049694, AL035072, AC006160, AC005081, AL040845, AC005630, AC004797, AL050350, AC005015, Y15994, AL008635, AC005081, Z98051, Z82976, AC004884, AL035460, AC007055, AC005602, L47234, AL1096703, AC005306, AC006132, AC007637, AL049776, AP000030, AC008928, AC005924, AL121603, AF129756, AL133246, AC007160, AC002316, AC005476, AL1109827, AC000075, AC004471,



HLTEF24	2830	871203	1 - 135	15 - 149	AB023049, AC004880, AF111169, AL031666, AC002073, AC003688, AL121652, AP000212, AP000134, AC007878, AP000251, AC006130, AC005519, AC004975, AC005071, AP000553, AC005664, AL132777, AF106656, AC003030, AC005690, AC007308, AC005759, AC004382, AC002543, AL034423, AP001138, Z94161, AF207550, AL031662, AC005345, AL022476, AL031311, AL022318, AC005274, AC002430, AC002128, AC002470, AC005777, AF024534, AC005221, AC005412, AC004025, AC000052, AC005037, AC005599, AC005261, AC007395, AC004913, AC005057, AC007880, AC005514, AC005291, AC004821, AC005914, AP001051, Z98036, AF030453, AC004526, AC007051, AC004812, AC031985, AL022313, AL132712, AC005372, AL023575, AC005091, AC005837, AL031678, AC002477, AF196779, AL133245, AC004753, Z98747, AL024498, AL049793, AC005696, AC006538, D28126, AP000065, AC001846, AC0016025, AC002375, AC004900, AC004217, AC004819, AL049781, AC007656, L78833, AL031228, AC005088, AC016027, AL033525, AL021391, AC004605, AC004019, AP000114, AL117693, Z93783, AF067844, AL031295, Z83844, AL031286, AC000379, AL049745, AC007934, AD000091, AC016830, AC005067, AL031283, AC005730, Z98884, AC006547, AC006480, AC002369, AL022302, AC007030, Z83856, AC006120, AC005695, AC005180, AL031685, AC006473, AC004000, AL031657, AF134726, AC005874, AF134471, AC000025, AP000512, AC005011, AP000432, AC005624, AC003966, L82828, AC005796, AL096701, AC004895, U07562, AC006241, AC004130, AL049779, Z69890, AL034429, AL050308, AF045555, AD000684, AC005606, AL135744, AC006367, AP000141, and AC007684.
HLTE47	2831	720474	1 - 588	15 - 602	AA826368, and L78833.
HLTE53	2832	723405	1 - 306	15 - 320	
HLTEK94	2833	795033	1 - 348	15 - 362	R63716, AA160481, AL091227, H40386, H48636, AA199616, R97634, AA226153, AA503119, TT0560, AL266133, N67592, T92445, A1923480, AA701121, AA665021, H58178, AA564859, AL049707, AA569187, AB923140, AL040500, AA084337, AW157326, AL281754, AA586441, AA713534, N58586, AA831388, T40617, AW340821, AA650434, AA713762, AA713933, AL400213, AC005314, AC005971, AC006051, Z86090, AC006965, AC006241, AC002115, AL031447, AC004990, AC007327, AP000297, D49685, Z95152, AC005940, AC004474, AL023579, Z69921, L48473, Z98050, AL031714, AB029900, AL034401, Z49154, Z82184, AC000094, AC003968, AC000081, AL109854, AL023879, AL023694, Z83819, AC004041, AC005600, AC005250, AF015416, AC003099, AC012599, Z99297, AC005006, D87009, AC004748, AL034402, AC006254, AP000884, AC003998, AC005844, AC005969, AL022574, AC006318, AL035413, AC005245, AC007091, AC002460, AC004106, Z99716, AC007016, AC006285, AC006211, AC016025, AP000044, AP001112, Z60589, AD001502, AL021391, AL050031, AC004647, AC004072, AC003002, AL049552, AL109939, AC004638, AC007243,

					AC004400, Z69917, AB020858, AF130343, L42240, AC004149, AC006606, D26067, L05367, AF151679, AP000294, D87015, Z81000, AF037338, AC003853, Z70688, AC000082, AC004257, AP001063, AL1080238, AL049741, and AL022575.
HLTEL11	2834	967529	1 - 319	15 - 333	AA360683.
HLTEL25	2835	508607	1 - 231	15 - 245	AA664604, Y77882, AL271985, AW084100, AA857812, AL421950, AC002511, AC002997, AL022316, AC003037, AL049759, AL049776, AL049829, AC006538, Z98884, AF002223, AC006121, AC007193, AC007055, AC004878, AC005324, AC005512, AF196969, AC002544, AC004020, AC007182, AC005071, AC005971, AL133245, AC004148, U91326, AC007227, AC006449, AC005015, AC002316, AC005233, AL133371, D87675, AL080245, AL049872, AC005531, AC006064, Z68165, AC007066, Z83847, AC005913, AF030876, AC005399, AC003101, AC004491, AC006241, AC002310, AP000141, AC003029, AC007707, AC007216, AC005736, AC006111, AC009516, Z85986, AL096791, AF205588, AC005363, Z86090, AL050338, AL022320, AC005529, AC005057, AC0016027, AC006013, AC005041, AF001552, AC004918, AC007308, AL031281, AC016830, AP000689, AC007075, AC005211, U91321, AL117337, AL049780, AL031311, AC004832, AC005237, AL008718, AB003151, AC003684, AC007226, AF111167, AC002425, AC004217, AC004644, AC002553, AL023575, AL022311, AC007151, AC005291, AC007546, AP000704, AC006464, AP000505, AC004821, AC007686, AC002470, AC004084, AL022238, AL031283, AC004859, AL109801, AL035422, AC005006, AF207500, AC002492, AC006071, AL033521, AC006023, AC004858, Z99716, AC005300, AF129756, AL035587, AL135744, AL034402, AL080243, Z98752, Y14768, AL139054, AC005667, AP000557, AC000159, AC005261, AP000113, AC007676, AL096761, AC004675, AC005562, AF165926, L78833, Z97053, U07563, AP000512, AC005412, AC007041, AC004686, AC002301, AP000130, AC004883, AC007993, D28126, AL033392, AC004531, AC003663, AL008582, AC005874, AF134471, Z83838, AC004209, AC005102, AP000208, AC005740, AC004895, AF088219, AL021546, AC004587, Z97054, AL121825, AC004887, AL049569, AC005004, AC004656, AC004967, AC005940, AC002039, Z84466, AC002477, AL031005, AP005566, AC002059, Z95114, AL021920, AL021578, AC005696, AC004150, AC006014, AL121658, D86992, AC006141, and AP000045.
HLTEOR8	2837	955228	1 - 321	15 - 335	AL121868, Z45382, AL273004, AA018678, and AA814210.
HLTES50	2838	958906	1 - 299	15 - 313	AC006323.
HLTES59	2839	739412	1 - 260	15 - 274	
HLTEX10	2840	968060	1 - 289	15 - 303	
HLTEX38	2841	573353	1 - 287	15 - 301	
HLTEZ24	2842	572779	1 - 456	15 - 470	AA361279.
HLTEZ33	2843	574654	1 - 344	15 - 358	
HLTFA05	2844	932221	1 - 539	15 - 553	

HLTFA34	2845	703403	1 - 202	15 - 216	AI431786.
HLTF04	2846	927449	1 - 1580	15 - 1594	AA813267, AW341552, AA878516, AA612649, AP935832, H17239, AA213623, AA720884, AB213368, Z447536, N749553, T75192, and K73793.
HLTF55	2847	669071	1 - 424	15 - 438	AA705418, AA682828, NG41118, AB940034, AA987277, AA340035, AA484366, AP983809, RG0108, T90092, AA918258, AW337710, AA643794, AI348199, H02927, TG3790, AC005538, AP000512, AC002394, AC007151, AL021707, AF207550, AP000295, AL008718, Z85987, AC008044, AL035458, AP000044, AP00112, AB023051, AC004448, AC002563, AL133485, AC007216, AC005071, AC007226, AC005291, AC004967, AC007425, AC005529, AL022476, AC007845, U08988, AC003666, AC007057, AL031681, AL022721, AL035090, AC006544, AC004799, AC004216, AL031390, AC008008, AC005163, AL109984, AC005377, AC022517, AC02997, AL121825, AL132777, AC005921, and AC004228.
HLTG25	2848	677696	1 - 296	15 - 310	AC005037.
HLTG61	2849	741529	1 - 510	15 - 524	
HLTG60	2850	973438	1 - 456	15 - 470	
HLTF51	2851	725140	1 - 421	15 - 435	AC004757, AC005962, AC004821, AL031985, AC004491, AL133500, AC004149, AC004895, AC007637, AC004671, AC005768, AL021546, AC004131, AC003108, AC016027, AC016830, and AP001054.
HLTG83	2852	744700	1 - 415	15 - 429	H90456, AA284708, AA805701, AL380487, AA203607, AL810648, AL829784, AL765051, AL048479, AL284543, AL254770, AL251944, AL251034, AL251203, AL022311, AL034553, AL109628, AB003151, AL109758, AC005837, AC004955, AC005844, AP00689, AC005689, AC004531, AC003010, AC003808, AL020997, AC005531, AL008730, AC007263, AP000116, Z93020, AF001551, AL118516, AC003108, AP000049, AC007226, AP000311, AC006115, AC007738, AC0066251, AL049743, AC007934, AC002398, U93739, AC002301, AP000152, AC006449, AL109627, AC002091, AC002395, AC004234, U91321,
HLTG84	2853	716323	1 - 440	15 - 454	AI126802, and AI367405.
HLTV54	2854	729247	1 - 393	15 - 407	AW205342, AA394225, AA398138, AL189026, AA283901, AL088021, AW196580, and AA504369.
HLTV64	2855	665647	1 - 399	15 - 413	AA992324.
HLTV67	2856	747584	1 - 417	15 - 431	
HLTV26	2857	681233	1 - 327	15 - 341	
HLTV75	2858	767060	1 - 338	15 - 352	
HLTHC34	2859	702078	1 - 411	15 - 425	AC004921.
HLTHH89	2860	974112	1 - 439	15 - 453	AC008062.
HLTH11	2861	966435	1 - 650	15 - 664	AI246061, AA324919, AL801563, AL054090, AA838192, AL539822, AA419225, N27874, AL048479, AL284543, AL254770, AL251944, AL251034, AL251203, AL022311, AL034553, AA557911, AL673038, AL292275, Z97630, AC007688, AC007283, AL022311, AL034553, AL109628, AB003151, AL109758, AC005837, AC004955, AC005844, AP00689, AC005689, AC004531, AC003010, AC003808, AL020997, AC005531, AL008730, AC007263, AP000116, Z93020, AF001551, AL118516, AC003108, AP000049, AC007226, AP000311, AC006115, AC007738, AC0066251, AL049743, AC007934, AC002398, U93739, AC002301, AP000152, AC006449, AL109627, AC002091, AC002395, AC004234, U91321,

HLTHJ35	2862	707245	15 - 543	AC007421, AC005014, AL021397, AL139054, U62631, AC007055, AC004834, AL080243, U75629, AC007363, AC005914, AL121058, AC004522, AC005152, AC007637, Z82215, AL049795, Z85986, AC005696, AL031848, AC005952, AC001231, Z85994, AC005274, AF068862, Z68870, AC007537, AC004612, AC007546, AC003007, AL049872, AC005002, AC004558, AL096791, AL022336, Y18000, AC005971, AC0068213, AL023381, AD001527, AC006509, AC004967, AL050341, AL031686, AF207550, AC005295, Z82245, and AL035683.
HLTHJ68	2863	719927	15 - 282	H48673, AA830499, and AA769512.
HLTHO15	2864	969356	15 - 241	T55452, T55533, T64583, T86962, R17130, R43223, R43223, R69530, R88169, W16432, AA01405, AA010287, AA010286, AA039982, AA040629, AA262779, AA262859, AA298842, AA429866, AA280051, AA470454, AA333802, AA583001, AA602082, AA602149, AA568998, AA577257, AA738040, AA769367, AA814611, AA815126, AA826473, AA827081, AA878242, AA928604, AA932452, AA976602, F18808, AA654132, AA417049, AA417180, AA609614, AA724635, AA835419, AA838750, AA854117, AA854205, AA772546, AA868928, AA72706, AL002704, AL092675, AL092814, D19911, Z38531, Z42297, AA682392, AA699613, AL241962, AL249764, AL284418, AL368959, AL216755, AL399983, AH75899, AL566500, AL799914, AL125509, AL126523, AL128828, AL129902, AL143123, AL627758, AL168615, AL2007750, AL620397, AL690783, AL701961, AL873590, AL805591, AL935907, AL951767, AW007590, AW009555, AL985824, AV024442, and AV082810.
HLTHO31	2865	697550	15 - 251	AL049610.
HLTHO46	2866	923482	15 - 305	
HLTHS75	2867	965126	15 - 484	AW173354, AF049559, AF049553, and AW386843.
HLTHV83	2868	780482	15 - 838	AA307492.
HLTHJ72	2869	968986	15 - 507	
HLTAA21	2870	671074	15 - 717	AA042852, AA044402, AL671077, AL801505, AA356376, AL828669, AA837771, AL042735, H54252, AA565232, AW272599, H43183, F13867, AA445598, AA904211, H53284, AA313884, AA662614, AL280266, AL355246, AA569715, AA552724, AW019964, AL246386, AL249688, AA374797, AA630245, AA584493, F35684, AL915081, AA058312, AW265688, AW302081, AL870453, AA493947, AA493789, AA586433, AL039309, AA284247, AA584484, W81372, W02749, AL612810, AA584800, AL580707, AL198718, AL923052, R93919, AL567391, AA811954, AL038304, AA728938, AL253987, AL282629, AL802804, AW051819, AL041352, AL754567, AL569100, AW192599, AA515351, AA638934, AL754105, AL755214, F33037, T69571, AL060972, R86977, AA302982, AA558404, H55213, AL080307, AL061619, AA937809, AA678472, AA557790, AA665181, AA746911, AW403829, AL310464, Z98474, T62078, AW419389, AW303142, AW275432, AL587467, AL079734, AL912401, AA376520, AL190648, AA349937, T95676, AA659048, AL034420, AC004822, AC004760, AC005859, AL112441, AC005534, AC004651, AL078603, AL1049570, AC005206, Z69922, AC007546, AC004167, AC005667,

HLVAA41	2871	909874	1 - 819	15 - 833	AL117344, Z49769, AC003690, AC002302, AC005291, AL021546, AL024498, AC002504, AC002128, AC007676, AC005256, AL021852, AL031315, L34594, AL034379, AC004949, U02052, AC007880, U02047, AC007566, AP000501, U95739, AF108459, AL008709, AC007993, AC002511, AC007312, AF130343, AC004033, AL031663, AC006011, AC002373, AC009044, AF196971, AC005657, AF053356, AC002550, AC006921, AC000661, AC002045, AC000649, AL110122, AP000193, AC008810, AL035072, AC008044, AP000050, AL109613, Z95114, AC004466, AL109983, AC008719, AC008079, AL035410, U17576, AP000117, AC007136, AP000313, AF207550, AC004858, AC006132, X55448, U52112, Z99716, AC002390, AL021306, Z49235, Z82214, AL035415, AC005500, AC005277, AC003035, AC000602, AC002429, AC006449, AL049631, AL008707, AC004000, Z82190, AC002404, AL035410, AL035423, AL021920, AB018295, AL031311, AC002039, AC005902, M29929, AL020997, AC006125, AC003098, AC011331, AP001052, AF031078, AP000049, AP000116, AC000039, AC005193, AC005411, AC016831, AC004843, AL021937, AC004859, AL049712, AC005539, AC004743, AL049829, Z98742, AF030876, AC004999, AL022163, AC006057, AC005736, AC005740, AL031121, AC005746, AC005823, AL049557, AF066501, AL031293, AP000311, AC003967, AC000159, AL049834, AC004584, Z84813, AC004797, AC004073, AF109907, L44140, AP001063, AC006088, AL031732, AF030453, AC004099, AL109656, Z82248, Z94865, AC005088, AF107259, AP000239, AC005876, AP000952, AL109839, AC006271, AC003109, M87918, AD000684, AL050318, AC007225, U10087, AC005081, AC005516, AC005726, AC007376, AC008062, AC002107, AC006398, AL049795, AC006050, AC004475, AL031433, U96629, AC001848, AC004074, AF017104, Z86090, AL078638, AC009263, AC007731, AF075098, L31565, AL035495, AC003043, AC002496, AC005480, AL109963, AB003151, AP001053, AC002090, AL117352, AC011718, AL031594, AC008641, AC002476, AC004223, AL031431, AF155238, AL022316, AF095901, U91318, AC005747, AC002106, AL009183, AL109801, AL050331, Z84469, AC005531, Y14768, AC006126, AC004922, AC004695, AC004921, Z98052, AC002301, AC004817, AC005037, Z84466, Z82217, AL118503, AP000552, AC004224, AC005034, AC002369, AL135879, AL121790, AL050337, AC000115, L47234, AC004605, AC007773, AL133396, AC005335, and AC006515.
HLVAA41	2871	909874	1 - 819	15 - 833	AL1074002, AW014573, AA326846, AB084046, AW070889, H447509, H44725, AL241812, AL624543, W45039, AL127179, AL564245, AA903221, AL1270448, AL923509, AL560536, AL05163, AL561701, AL039776, AL886440, AL476086, AL285732, AW085799, AW189802, AL45787, EL12888, AL122049, AL133607, AL133053, AL133049, AL133015, and AL133008, R02835.
HLVAA44	2872	964841	1 - 362	15 - 376	U81830, and AC007450.
HLVAB02	2873	920407	1 - 333	15 - 347	AL243319, AL288451, AL521658, AW301143, AW444808, AL147123, AL056464, AL827213, AL925715, AL085752, AB913241, AA693938, AL869312, AL122654, AA937953, AL927208,
HLVAB38	2874	861161	1 - 444	15 - 458	
HLVAC38	2875	668989	1 - 259	15 - 273	

				AL194394, AL142336, AW451297, AL123244, AA736786, AL742610, AA522674, AA603325, AL1425075, AL094469, N04395, AL742621, AL445367, AL420510, AL866676, AL963292, AA627433, AL356146, AA968590, AL872656, AL222629, AW167511, R09552, AL194056, AL803734, and Z38818.
HLYA010	2876	964845	1 - 583	15 - 597
HLYAE50	2877	576449	1 - 459	15 - 473
HLYAF20	2878	668872	1 - 715	15 - 729
HLYAF28	2879	975007	1 - 633	15 - 647
				AA195902, D81936, AW373648, H72932, AW373647, AW393531, AW373665, AA278187, and AA284401.
				Z09396, AW392670, AL134920, AW372827, U46341, AW363220, AW384394, AL119355, AL119319, AL119457, AL119497, AL119483, AL119324, AL119443, AL119484, AL119363, AL119391, U46349, AL119341, AL119335, AL043029, U46351, AL042984, AL119522, AL142137, AL134531, AL142131, AL042975, U46350, U46347, AL119444, AL042973, AL119418, AL037205, U46346, AL038520, AL037526, AL119464, AL036190, AL036268, AL036767, AL037077, AL036774, AL037021, AL037027, AR060234, AR066494, A81671, AB026436, and AR054110.
HLYAG42	2880	691747	1 - 419	15 - 433
HLYAH26	2881	855981	1 - 569	15 - 583
				AW370369, AA825707, AL179831, AL224367, AW292092, AL832007, AL250843, AA825205, AL434322, AL250350, AW003249, AF110467, AF110466, AF137027, AF110465, AB025274, and AB018563.
HLYAK12	2882	970807	1 - 283	15 - 297
HLYAL83	2883	780075	1 - 469	15 - 483
				AL1990837, AA630888, AA907192, AL283022, AA318347, AL891038, AL821307, AA349881, AL951933, AW129165, AA487512, AL298557, AA776684, AA745570, AL1749306, AA614647, AA492266, H96580, AA827080, W80853, AL1135674, AL1889426, AA302966, AL285709, AL023584, U92032, Z84489, Z77249, AC004821, AC002477, AC004520, Z93023, AL023807, AL109963, AC006001, AL035071, AL021807, AC005057, AL109628, AL031577, AL096701, AC004841, AL133355, AL117354, AC005901, AC006084, AC004999, AC004985, AL109984, AL024508, AC004472, AL133353, AL132641, AC005225, AL031666, AC004129, U62293, AL109758, AL021578, AL033525, AL050318, AL133448, AL022320, AL006791, AL033527, AP000694, U89337, AC004531, AC004067, AC004820, AC006512, AL098791, AL049881, U85195, AL035450, AC005365, AL109952, U80017, AB000658, AB014007, AL133382, D26141, AC004500, AC004527, AC005320, AP000510, AL022329, AC006026, AC004836, AL080317, AC005011, AL1132987, AC005684, AF195658, L44140, AC007792, AL008718, Z98941, AF017104, AL117337, AL049745, AC004491, AC006241, AL133163, AF006501, AL034345, AL031587, AB023048, AL133245, AL109623, AC000379, AC004035, AC005362, AC007666, AC003026, AC004587, AC004217, AC004263, AC004196, AF0205588, AC005393, AL022162, AL031277, AL034371, AC009330, AP000113, AP000045, AC005722, AC002365, AL031602, Z84484, AC006050, AC005200, AC012599, U95742, AC005089,

				AC007114, AL049709, AC004891, AL049712, AC006531, AL049830, AL049759, AC006139, U73167, U90094, AC007860, AC005385, AC004601, AL022721, AC006064, U91318, AC005874, AF134471, U63721, AF165124, AC007868, AC005220, AC006530, AC008040, AC002400, AL049570, Y14768, AR036572, Z84467, U91328, AP000131, AP000209, AC005231, AF111168, X14448, AC004938, AC007124, AC002126, AL050324, AJ246003, AC004905, AC000086, AC005764, AL109956, AC006004, AC005839, AC004817, AC005803, AC002425, AL049849, AC005971, AC005856, AL049780, AC007216, AC004647, AL09627, AC007880, AF129756, AF111167, AL049553, AL078584, AC007372, AL049837, AC005940, AL022163, AC004858, U52111, AC002565, AL078584, AC004462, AL112758, L77570, AC004686, AP005555, AC007327, AL021917, AC003037, AC002369, AC007308, AC004815, AL117344, AL023284, AC005697, AJ003147, AC005670, AC005625, U96629, AC004914, AC004975, AL035249, AL031657, AL034417, AC003104, AC007429, AC007688, AC005563, U91323, and AC005082.
HLYA031	2884	698104	1 - 463	15 - 477
HLYA067	2885	924042	1 - 699	15 - 713
HLYAP10	2886	964748	1 - 418	15 - 432
HLYAP26	2887	681892	1 - 462	15 - 476
HLYAQ80	2888	868396	1 - 615	15 - 629
HLYA056	2889	935552	1 - 517	15 - 531
HLYA029	2890	576596	1 - 502	15 - 516
HLYA080	2891	689969	1 - 691	15 - 705
HLYA035	2892	780987	1 - 373	15 - 387
HLYA061	2893	707248	1 - 332	15 - 346
HLYA085	2894	575868	1 - 379	15 - 393
HLYA062	2895	825513	1 - 356	15 - 370
HLYA065	2896	575863	1 - 309	15 - 323
HLYBA01	2897	916635	1 - 464	15 - 478
HLYBA42	2898	871648	1 - 753	15 - 767
HLYBA72	2899	717644	1 - 462	15 - 476
HLYBA85	2900	575878	1 - 462	15 - 476

HL19A96	2901	575834	1 - 470	15 - 484	
HL19B50	2902	708624	1 - 486	15 - 500	
HL19B65	2903	866883	1 - 645	15 - 659	<p>AI820992, AW105729, AW1474993, AI0003988, AA635433, AA687542, AI049630, AA015948, AI572680, AI358313, AA862029, AI283938, AA455699, H86399, AA515924, AI302350, H127788, AI302978, AA526658, H47736, AA526659, AI282479, AI061313, AA364082, AI049504, AW079667, AI591134, AA244181, AI678476, AW15531, AA728861, AI254779, AI590404, AI123214, AW02049, NS5076, AI805699, AA862312, F17537, AA573000, AW151191, F23221, AI297789, AA846014, A2716884, AW265648, AA084320, AI143653, AW129188, AI049680, AA018258, AA695528, AI047349, R93233, AI146336, F29968, AA300049, AI002863, AA636077, AI268818, AI138262, AT999421, AI032411, H91062, AI679759, AA807704, H91704, AA278496, AW192930, P08866, AI520925, N78600, F36200, AA832124, AW192518, AA604149, AA668421, AA768179, AI121039, AI150934, AI147521, H91358, AB10343, AA342238, AI610994, AI174703, F31811, AA130696, AA342626, AW243945, AW157128, H91672, AW410844, AI040051, AA598740, AW148821, H59856, AA769481, AI065043, AI254267, AA010265, AC005632, AF049895, AF001549, AC005031, AF000555, AF060929, AC006538, AF111168, AE000658, AL031295, AF088219, U80017, AC000353, AC004083, AC001643, AL049835, AC005288, L47229, AC005971, AC004033, AC005500, AL096701, AC001643, U02057, AL109956, AC005666, L47227, AC011456, AC005682, AC005913, AL109798, Z98051, AC004663, AL022316, AP000501, AL049757, AC005730, AC002991, L47222, AC004151, AP000469, AL080317, AC004897, AC005409, AF064861, AC005231, AC005157, AC004882, AC005856, AC005529, AC006162, AL079295, AL080243, AC008018, AC004216, AL133289, AC006536, AC005828, AC003688, AL035587, AC006360, U85195, AL031347, AP000503, AR036572, U91328, AL035420, AC009516, AC007993, AC004985, Z82172, AC005722, AC005081, AC004966, X89398, AC005696, AC003665, AL049776, AC005332, AC007055, AC004253, AF045555, AC004000, AL021578, Z74739, AC000159, AC004056, Z96074, AP000010, AC005214, AL035445, AL139054, Z97053, Z98941, AC005531, AP000030, AL023799, AF053356, AL022721, AL080242, AC005003, AC005972, AL121603, AC005209, AC005215, AC004851, AP000152, AC005373, AL031685, AL023801, AC005924, AC004738, AL109627, AP000537, AL021153, AC005726, AC004132, AP000552, AC003363, M63796, AC006271, AL035461, AP000065, AC007766, AC004132, AP000153, AC003098, AF134726, E15652, AC005527, AL050821, AL121754, AF112441, AP000153, AC001588, Z82206, AC006385, L78810, AC007899, AC007746, AC003007, AP000011, AC001551, AC005484, E15648, AL132712, AL049843, AF038458, AP000556, AC008055, AC007919, AL121825, AL031007, AC007742, AB023048, AL022476, AC005368, AC005213, AF165926, AC006014, AC003043, AF019369, AC002544, AF109907, AC007845, AC005234, AB020866, AC004230, AC007637, AC005952, AC005057, AL049766, AC006064, AL049694, AL109853, AC006333, AC004686, AC005488, AF111169, Z93017, AL050140, AC005859,</p>



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HLYBD46	2904	575865	1 - 358	15 - 372	AW089101, AA303007, AL290405, T49633, AA864603, AL382825, AW179306, AW179305, AW380254, AL023111, F17774, AA478355, AL688899, AA679956, AT752120, AL649968, AA680243, AA329995, AA829490, AA478297, AL119649, AC004894, AC004000, L78810, AL009181, AC005291, U51244, AC006160, AL031311, AL049759, AC009542, AC004492, AC004531, AL034379, AP000228, AL021453, AP000140, AP000088, AC004063, AF147304, AP000665, AC005800, AC004087, Z82206, AC005881, AC005740, AC002287, Z84474, Z83846, AB014078, AP000514, Z97989, AC005235, U37355, U37452, L07900, U73638, AC005783, AC006077, AC005377, AC004999, Z83826, AL031650, AC004838, AC008033, AL021978, AC007664, X95386, AF063396, AF129077, AC006388, AF038458, AL031282, AL031256, AC004167, AC003957, AL049692, AL020997, AL022316, AC007263, AC004882, AC009330, U82828, AC005274, AC007308, AF053356, AC005529, AB028964, AC004644, AC006473, AL080241, AL049757, AC004813, AL049745, Z98941, AL023805, AL133241, AL031228, AC006111, AL009183, AL109984, AL008719, AL117338, AC004004, AL023233, AC005833, AC006089, AC005041, AJ007973, AC007192, AP000223, AP001051, AL031905, AJ006997, AC005519, AC003071, AC004687, AC004491, AC006121, AL008629, Z97352, AC000087, AC005206, AC005667, AC008122, AC004983, AL024498, AC007226, AC0055081, and U95090.
HLYBE47	2905	706517	1 - 417	15 - 431	AA873012, and AA470597.
HLYBE75	2906	828077	1 - 527	15 - 541	AA393103.
HLYBG18	2907	575872	1 - 465	15 - 479	
HLYBH08	2908	856445	1 - 467	15 - 481	
HLYBH56	2909	733472	1 - 471	15 - 485	AL076697, and AL076255.
HLYBH91	2910	576793	1 - 464	15 - 478	
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HLVB44	2911	728035	1 - 253	15 - 267	
HLVB10	2912	964752	1 - 464	15 - 478	
HLVB42	2913	713845	1 - 559	15 - 573	
HLVB92	2914	856419	1 - 1064	15 - 1078	AA830761.
HLVBM35	2915	625408	1 - 461	15 - 475	W87342, W87343, and A1797550.
HLVBM75	2916	757084	1 - 387	15 - 401	N72584, F31792, A1950359, and Z97055.
HLVBN94	2917	670500	1 - 380	15 - 394	AC007204.
HLVB053	2918	721377	1 - 416	15 - 430	
HLVBR03	2919	924515	1 - 428	15 - 442	AC004056, AC007214, and AC007458.
					AC004227.

HLBYBK41	2920	712389	1 - 631	15 - 645	AI769511, AI692550, AW384109, AW384104, AW384108, AW384074, AW384071, AW384068, AW384073, AW384075, Z42260, AA676852, AI681360, and AI022067.
HLBYBK83	2921	750318	1 - 481	15 - 495	D78885.
HLBYBS12	2922	970795	1 - 651	15 - 665	W87923.
HLBYBT19	2923	668744	1 - 432	15 - 446	AI799856, and AA447275.
HLBYBT64	2924	527687	1 - 433	15 - 447	
HLBYBT69	2925	678175	1 - 452	15 - 466	
HLBYBT84	2926	575828	1 - 45	15 - 59	
HLBYBU28	2927	914702	1 - 418	15 - 432	
HLBYBU52	2928	727213	1 - 463	15 - 477	
HLBYBV42	2929	713837	1 - 298	15 - 312	H66883, W03665, and AC007068.
HLBYBW12	2930	970796	1 - 423	15 - 437	AI094626, AW204786, AI935606, AW246712, AA336176, H92959, AI433978, AI94509, AI039276, AI045163, AI653331, AI045620, AI039421, AI923046, AI289992, and AW082113.
HLBYBW35	2931	812692	1 - 634	15 - 648	R98218, AA570441, AI636734, AA324059, AW245354, AI446259, AA324559, AA720582, AA326603, AI558928, AA663074, AFI62750, AA654482, T08834, AI029796, AI039930, AA593471, AA158549, H65679, N25304, AW078909, H94979, AW088557, AA457504, AA485343, AI049709, AI732720, AI734119, AW238712, AA364082, AI473995, AA484191, AA825827, AI064786, T08258, AW192373, AC002563, Z83826, U91323, AC004796, AC005726, AC005385, AC004832, AI031767, AC005057, AI035422, AI031279, AI021578, U78027, AI035420, AC004905, AP000355, AC003684, AFI96779, AC007899, AFI96972, AI021154, AC002551, AI049776, AC004821, AC005274, AC004953, AC007685, AC005484, AC007421, AI078581, AC005796, AC005562, Z93017, AC007050, U91318, AC007386, AC005940, AC003692, AI003147, AP000356, AP000555, AC006538, AC006441, Z85996, AF033356, AI049694, AI050350, L11910, AC003043, AC004491, AI008718, AC006530, AC008064, AC007055, AI035413, AC005529, AC005088, AC004983, AI049795, AI031774, AC010170, AC002423, AC005358, AC007011, AP006967, AC007388, AC05070, AC005096, AC002312, AC005900, AI050318, AI049709, AC002470, AI097998, AC031680, AC006271, AI050307, U91321, AP000359, AI031295, Z94056, AP000128, AP0000206, AP000313, AP000501, AC007225, AI050341, AC004383, AP000104, AC008116, AI135744, AFI29756, AC005346, AP000050, AI021155, AI132987, AP000466, AC006427, AP000113, AP000045, AC005667, AP000117, Z99716, AC005399, AP000245, AP001053, AI009181, AC006023, AP000689, AC005206, AC004526, AF020465, AI022165, U96629, AC006312, AI133163, AC009509, AC005531, AC005924, AC004477, AI049576, AC005180, AFI07885, AI132642, AC007216, Z85986, AC005520, AC005839, AP000700, AC005971, Z97054, AI049843, AC003663, AI031447, AC005921, AC002369, AC007676, AF030453, AC007114, AI133312, AC006014, AC007695, AF104455, AC004985, AI031985, AC002525, AC008044, AC006101, AC002375, AC006283, Z92844, AC006211, AFI07104, AC002091, AP000557, AC005225, AC007308.

AL023575, AL109758, AC003957, AC007537, AC007542, AL022336, AC0059046, AC006531, AL133244, AC005738, Z95317, AC006126, AL034420, AC002128, AC004823, AL031282, AC000377, AC005488, AL096791, AP000704, AL139054, AC002996, AL022313, U8159, AC004686, AL121603, AC003982, AC005619, AL031390, AC020663, AC006111, AC003072, Z93023, Z83844, AC002039, AC011331, Z83838, AE000658, AC004882, AC005899, AC008079, U95739, AC004381, AL049569, AL035682, AC007151, AP000210, AP000132, AC002477, AP000694, AC002395, AC004531, AL031284, and AC004675.	HLVYBX77	2932	721086	1 - 335	15 - 349
	HLVYBX84	2933	754842	1 - 568	15 - 582
	HLVYBZ17	2934	577479	1 - 373	15 - 387
	HLVYBZ23	2935	856450	1 - 398	15 - 412
	HLVYBZ60	2936	682675	1 - 264	15 - 278
	HLVYBZ86	2937	856436	1 - 574	15 - 588
	HLVYCA76	2938	770107	1 - 384	15 - 398
	HLVYCA77	2939	677738	1 - 788	15 - 802
	HLVYCC39	2940	710843	1 - 564	15 - 578
AL023575, H62833, AA397821, M77838, AL033842, AA502532, AP000511, AL020995, AE000658, AL003018, AL109758, AB023050, AC007225, AF109097, AC009501, AC004211, AL010770, AP000512, Z84486, AC002310, AC005585, AC003029, AC004491, AC004832, AL031255, AL031848, AC006285, AL049780, AC000353, AC006312, AL049569, AC003524, AC004548, AC007314, AB001523, AF165926, AC006071, AC005081, AC002611, AC003059, AC004223, AC002126, AL121653, AC007686, AC006942, AC005911, AC002312, AC005846, AC002283, L47334, AL080242, AL035422, AC006930, Z97056, AC005046, AL009181, AC002300, L47334, AL000449, AC005527, AC008498, AL009172, AC006251, AL031427, AL031311, AC005907, AC005225, AC007690, AP000691, AC004234, AC004883, AC007546, AC005529, AC007555, AL133353, AC005157, AC005520, AC002369, AC002316, AC005015, AC007055, AP000299, AL133246, AL049697, AC004985, AL021391, AC007899, AC005261, AC004588, AC002115, AP000553, AC009516, AF053356, AC006271, AC005231, AC004801, AC004778, AC004013, AC006088, Z93241, AC004542, AL139054, AC005971, AC005775, AC002314, AL022326, AL049709, AL049839, AC007540, AL011930, AL049835, AC006077, AL133245, AC006211, AL133448, AC000404, AL050341, AC000025, AP000048, AL133165, AC005619, AC044228, and AL096766.	HLVYCC65	2941	932727	1 - 493	15 - 507
	HLVYCF12	2942	908532	1 - 361	15 - 375
	HLVYCF46	2943	718930	1 - 526	15 - 540
	HLVYCF70	2944	741417	1 - 399	15 - 413
	HLVYCH10	2945	964354	1 - 370	15 - 384

HLVGH15	2946	964840	1 - 363	15 - 377	R02835.
HLVCM68	2947	658540	1 - 432	15 - 446	AF070718.
HLVCM88	2948	732392	1 - 380	15 - 394	
HLVGN75	2949	761510	1 - 556	15 - 570	
HLVCO31	2950	697787	1 - 312	15 - 326	AA230096, and AA530904.
					A1370523, N23255, AA074026, N27657, R66922, AW085624, AA579437, A1114828, AA382130, AA190418, H64735, AA488846, A4350460, A765684, T24020, A092694, AA405463, A1375472, AA443663, AA577770, A174138, A1241173, M77904, AA338281, AA465689, N21546, A1127067, A1916406, AW103010, AA584123, AA436155, AA436281, A1587537, A1812684, AA583390, A181345, A4906657, A1065029, AA715389, A1439045, A1278256, R70326, H75272, N51132, A4910215, A1052493, AA736485, AA461430, AA805014, AA205743, A1048023, T68597, N28319, A1031774, A1022171, A1133485, Z84484, A1022067, AC004021, A1049738, Z83855, AC005844, A1022312, AC004000, AC007676, Z93017, AC004583, M63420, AC005354, AC004264, A1035410, AC005088, AC005562, AC004231, Z84489, A1035413, AC000353, A1035420, A137457, AC004861, A1021878, U73479, AC004560, AF107045, AC005387, A1031255, AP000068, A1031848, AC005544, AC007327, AC007842, AC006241, AC004223, AC004167, A1135744, U62293, U63721, AC005057, U46120, AC005253, Z83097, A1008635, A1009031, AC002326, AC004770, AC006017, AC004797, AP00502, AC005393, Z95329, AC005412, AP000501, AF196970, AC004382, AF141308, U93037, AC002116, AC007201, AC000086, X55448, AC006030, AC002369, AP000008, AC005049, AC006088, AP00704, AC005833, AC004585, A1031985, A1034419, A1034549, A1022316, AC002454, AC005988, A1022163, L11910, AC009263, L41440, Z99258, AP000350, A1118509, AP000510, Z84466, Z97054, AC004458, A1031681, AC004106, AP005654, L03307, AC004132, AC006084, A1109984, AC002477, Z98044, AC005225, U52112, AC005920, A121652, AC005529, AP001053, AC006312, AD000813, AC004839, AC002420, AF045555, AC004876, A1031056, AC005081, Y10196, AC006043, A1035079, Z95116, A1133304, A1049745, Z49250, AF033356, and A1121655.
HLVCO66	2951	785990	1 - 295	15 - 309	A1918361, A1214209, A1820877, A733217, A1346354, H65493, and A1031666.
HLVCO68	2952	729293	1 - 485	15 - 499	AW299770, AC004645, and AC006111.
HLVCP66	2953	706435	1 - 651	15 - 665	A4251713, AF080576, AA381037, T49826, T49825, and AC007041.
HLVCO53	2954	728046	1 - 680	15 - 694	A1022098.
HLVCO68	2955	752887	1 - 355	15 - 369	A1288307, A1186282, AA523891, C75540, A1037127, A1193168, AW407585, AA112924, AA458534, AA515631, A1613465, AA911520, AA001471, Z99943, A1031681, AC002364, AC005952, AC005670, A1033538, AC016027, AC016830, AC004955, Z83840, A1031848, AC005803, and A1050327.
HLVCM47	2956	850147	1 - 824	15 - 838	AW276220, Y92688, and AA341978.
HLVCS15	2957	660006	1 - 371	15 - 385	
HLVCM49	2958	718840	1 - 294	15 - 308	

HL.YC.W04	2959	615021	1 - 336	15 - 350	AA720682, AB24562, F19258, AA654627, AI493615, AA503947, AL040913, AW340844, AA650244, AA077817, AA228329, AI679782, AI886176, AA729264, AA515109, AA342958, AI205126, AI357551, AI929531, AW103769, AW162049, AA610491, AW008317, AI053816, AI054246, AA743956, AI282336, AA904218, AL046898, AW301818, AI469172, AI307426, AI584082, AA745410, AL048616, AI351938, AW361583, F29989, AW071063, AI581342, AI802526, AI537955, AI446518, AI358229, AI807372, AI565245, AW406755, AI365988, AA340003, AW339687, AI635272, AI274692, AA228420, AI003172, AI922002, AI523897, AL041368, N25927, AA578154, AW157608, AL138242, AI214510, AI281808, AW104748, AW080134, AI281807, AA713815, W60516, AI111177, AI469878, AI446601, AI469624, AL138265, AA639250, AI282832, AW243960, AI633479, AI858451, AW029038, AI828710, AA394271, AA482711, C75026, AA503258, AA558857, AI471534, AI683577, AW236342, AI005388, N66026, AC004383, U62317, AF078904, AC004620, Z84721, AC003015, AC005206, AC005667, AC002375, Z15025, AF129756, AI109827, AL022328, AC004478, AC005778, AC004583, AC005099, AC006208, AC002395, Z99497, Z98747, AC001082, AC006057, AC020663, AC004890, AC004033, AI132826, AF037538, AL050341, AC007731, AC005500, AC004388, AC010722, AL008629, AC003035, AC010072, AC002310, AC004472, AC002073, AC005794, AI133448, AC009044, AF124730, AC004806, AC000118, AC000003, Z84480, AC004408, U70984, AF011889, L48472, AL031655, AL035690, AP000039, AC000085, AL031584, AC009946, AF015720, AC002543, AL080241, AC003982, AL021326, AC002378, AL023879, AC005257, AP000432, AC005746, AC005037, Z98754, AF064861, Y14768, AF047825, AP000495, AI109627, AC005838, AL021878, AC002350, AC005245, AC007686, AP005505, AI229041, Z98744, AC005356, AI109622, AC002312, AC005086, U91327, AC005211, AI066996, AC007292, AC008984, AC004964, AC004622, AB020869, AI132712, AC005284, AC000804, Z95624, AI117354, AC003815, AC004066, AC002483, AC000025, AC007786, AF196971, AF165176, AI121846, AL023694, Z97635, AC009510, AC005184, AC007376, AC004526, AP000656, AC002565, U89387, Z84572, AL049745, AC009069, AL034406, AC006965, AC005046, AF109907, AC002432, U07000, AC0066241, AI031591, AC006207, AC007387, AC005751, AC004638, AC004149, AC007221, Z69705, Z86061, Z76735, AC004540, AI096805, AL023755, Z97876, AL022395, AI033381, AI031427, AF042090, AC000052, AC007537, AL022163, AC003050, AI080276, AC004972, AC005940, AI031680, AL133494, Z73965, AC000392, AC005913, AF064857, AC004986, AL049776, AC004909, AP000561, AC004810, AC004596, AI031666, AC005071, AC004019, AC006213, AF064864, U75285, AC004592, AC006556, AI109967, AP000023, AC005194, AC005503, AI117340, AF128846, AF128847, AC004099, AF128848, AB026188, AL096769, AL078472, AL049873,
HL.YC.W13	2960	656827	1 - 366	15 - 380	
HL.YC.W20	2961	669541	1 - 355	15 - 369	
HL.YC.W62	2962	856443	1 - 1140	15 - 1154	

HLVYC30	2963	650859	1 - 364	15 - 378	AC005527, AF002991, AP000358, AC002984, AF045448, AC005159, and AP000359.
HLVYC263	2964	744886	1 - 430	15 - 444	AT792627, AI254439, AI581223, AW086361, AI349662, AI053903, AI862231, AI223748,
HLVDB85	2965	784253	1 - 343	15 - 357	AT192525, AW197508, AI348722, AI684349, AI053450, AI583532, AW182499, H65697, AI248494, W24698, AI140609, AI770092, AA767864, AA573242, AW264786, AA235693, AI214028, AI266177, H95865, H72049, AW079694, AI011930, AC005233, AC005972, AC002428, AI031733, AC002990, U95740, AC004662, AF196969, AC002378, AC010206, AP00356, AF117829, AP00252, AC005902, AP000212, AC004841, Z85987, AP000031, AC005622, U91323, AC004999, Z95331, AC004534, AC005482, AP001067, AC004973, AI132708, AI021917, AC005659, AI133238, Z84469, AC007277, Z98941, AF067844, U91321, AC004087, Z98044, AI121754, AC002312, AC008928, AC006160, AC005658, AC004033, AC004025, AC004953, AI031985, AC004134, AC005211, AC004079, U89387, AF111167, AC000127, AI008732, Z98743, AC004796, AC005969, AC004144, AC005793, AC004935, AC008064, AI049709, AC004143, AC006011, AC004985, AI121577, AI049539, AC004084, AI022718, AI122020, AP000167, AC005488, AI132987, U95739, AI049843, AF001548, Z96074, AI034572, U91328, AC005088, AC004552, AC003078, AI022163, AI009181, AI133163, Z83822, AP000343, AC006430, AI031466, AI049855, AC007371, AC005105, AC006026, AI035407, AC004638, AI049872, AI034402, AC005280, AI022721, U82671, AC002522, AC000095, Z95113, Z95116, AC004992, AC006515, AI022316, Z93023, AC003010, Z84466, AC007707, AC004410, AC007057, AC006039, AC004927, AC003065, AC005033, AC007245, AI078463, AC007435, AC002492, and AI117375.
HLVDC02	2966	919586	1 - 730	15 - 744	
HLVDC77	2967	772022	1 - 438	15 - 452	
HLVDD13	2968	657010	1 - 547	15 - 561	
HLVDC06	2969	935149	1 - 645	15 - 659	
HLVDC21	2970	856413	1 - 538	15 - 552	AI476323.
					AI306717, H81406, AI134167, AA496309, AI653823, AW408596, AA582746, AA837771, AI185394, AW237905, AI471586, AI186233, AA714011, AW084173, AI915081, AI973173, AI569700, F35684, AA368329, H40478, AA487226, AI520967, AA111870, AI678287, AA502207, AA581247, AI018231, AI680547, AI298079, F33037, AI300818, AI310992, AA434078, AI078409, T08386, AI187148, AW069227, AI135363, AI755057, AA658131, AA715962, AA297006, AW722505, AA445949, AI634187, AI697242, AA077637, AI457313, AA375848, AA297698, AI272192, AI340832, AA557911, AW440451, AA778962, AI565138, AW028170, AA715983, AI653783, AI042373, AA947369, AA937809, AA071045, 942653, AC006479, AI034419, M87912, AI049839, AC005014, AF165141, AI133246, AI022323, AC007421, AI133245, AC005846, AI031984, Z84470, AC007993, AI022328, AC004385, AC004622, AI034429, AI049795, AF000142, AP000089, AC004817, AC004694, AC007773,

HLVDG27	2971	682910	1 - 568	15 - 582	AF001549, AC009247, AC007686, AC004230, AC006014, AP004472, AC005821, AC005081, U91326, AC004831, AC006236, AC002544, AF111167, AL035495, D87675, Z95152, AC012384, AC005488, AC005043, AC005104, AC005763, AC005015, AL023876, AB001523, AC004106, M55270, AC009946, AC004820, AC005519, AC002429, AC005924, Z84469, AC007386, AL050312, AC005911, AL031428, Z94801, AC004041, AL035683, AC004223, AF196779, AL035417, AC002094, AL031276, AP001065, AP000113, AP000045, AC007563, Z95115, Z97196, AC007436, AC006468, AC007156, AC004796, U07561, AL133035, AC003871, AC003963, AL031602, AL049766, AL031278, AL035458, AC005736, AF029308, AC007792, AL008707, Z98885, AC004025, AL132712, AC005288, AC007546, AP000313, AC005409, AP000501, AL031659, AL133312, AC005746, U62317, AC004076, AF196971, U95742, U91318, Z82195, AC006088, AC006285, Z82205, AL035414, AC004841, AP000050, AC007655, AC004874, Z95114, AL022394, AL050307, AL021579, AL031775, AL022316, AP000558, AC003669, AL109963, AC004129, AC005480, AL049872, AL049745, AC005189, AP000509, AL022326, AP000117, AL008734, AC004112, AC004383, AC004819, AF135187, AL135960, AL131016, AL049776, AC005078, AL022476, AC005829, AD000813, AC004148, AP000022, AC006582, AC006430, AC007308, AC003684, Z98750, Z82176, AC003982, AL109623, AC002077, AC005722, AC004253, AC002314, AL031393, Z97054, AL049540, AF001552, AC005551, AL096701, AC005280, AC004797, AC005328, AL109798, AL034420, AF002059, U62292, AP000163, AC006062, AC005612, AC005585, Z98743, AL035587, AL117352, AF048729, AL080313, AL031680, AC002364, AL049830, AC005773, AC002492, AC007052, AC006026, AC004765, AC002477, AC007216, AC005877, Z49236, AC004655, AL080317, AC007298, AL132641, AF139813, Z98048, AP000694, AC005206, AC005294, AL009172, AC005943, AF181897, AC002470, Z93784, AC005971, AL031686, AF064857, Z98304, AC005225, AL022312, AC004560, AC00120, AL031657, AL031283, AL022165, AB000931, AC006276, AL117354, AL031595, Z84466, AC005790, AC011311, Z83846, AC004228, Z82184, AL022318, AC005667, AL031589, AP001056, AL022333, AC007774, AC005513, AC007725, and AL031390.
HLVDG38	2972	597131	1 - 397	15 - 411	T83869.
HLVDG59	2973	871587	1 - 439	15 - 453	
HLVDH27	2974	678266	1 - 703	15 - 717	AA572675, AA579556, AL61854, T95591, T95067, and AA813887.
HLVDH32	2975	699082	1 - 717	15 - 731	AA527402.
HLVDH52	2976	726575	1 - 526	15 - 540	R99046.
HLVDJ08	2977	959055	1 - 513	15 - 527	AL590217, AA343092, AA317170, AW157326, AW256342, AA593060, C05755, C06327, AP957850, AA574282, A1114846, AW440976, A1923140, AL653905, AA330380, AW131249, AW390062, AA663306, F35659, AA947370, AA828984, A1291124, AA084070, AA244208, M86058, A1291268, AL537030, AL190911, AL312149, AL118947, AW406162,



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HLYDK74	2978	738346	1 - 555	15 - 569	AW005554.
HLYDL24	2979	677041	1 - 488	15 - 502	AA129914, AA128462, H94876, H72836, and AL1818080.
HLYDL60	2980	909866	1 - 378	15 - 392	D29642.
HLYDL75	2981	790244	1 - 555	15 - 569	
HLYDM51	2982	973377	1 - 503	15 - 517	
					Z99396, AL036418, AL038837, AL037051, AL036725, AA631969, AV392670, AL039074, U46341, AL036924, AW372827, AL036858, AL119497, AL038509, AW384394, AL039564, AL039085, AL037094, AL039156, AL039108, AL119483, AW363220, AL039109, AL039128, AL036196, AL036190, AL119319, AL119355, AL119457, AL119443, AL037526, AL119324, AL036767, AL039659, AL037082, U46349, AL119484, AL119363, AL119391, AL037639, U46350, AL119522, AL038531, U46351, AL119341, AL119335, AL043029, AL119496, AL119396, AL037085, AL039648, AL045337, AL119444, AL119418, AL036238, AL037077, U46347, AL037085, AL042909, AL134920, AL039678, AL039629, AL134531, AL134538, AL039386, U46346, AL036733, AL042965, AL037205, AL119439, AL039423, AL036268, AL042984, AL042975, AL039150, AL038447, AL040992, AL042614, AL134528, AL042433, AL038520, AL042973, AL134533, AL037027, AL036998, AL119399, AL037615, AL038831, AL142134, U46345, AL043011, AL042551, AL119464, AL036191, AL042544, AL043019, AL043033, AL039410, AL042450, AL042542, AL037178, AL036679, AL036765, AL036719, AL043003, AL036774, AL037021, AL036836, AL036999, AL036158, AL036886, AR060234, AR066494, A81671, AR023813, AR064707, AR069079, AB026436, and AR054110.
HLYDM62	2983	743380	1 - 547	15 - 561	AL022098, and AC005215.
HLYDO56	2984	733240	1 - 220	15 - 234	
HLYDO75	2985	761170	1 - 346	15 - 360	AA026296, AA086041, AA086123, and AA026297.
HLYDS11	2986	966732	1 - 431	15 - 445	Y97786, AA007553, AL031432, AC004520, and AL031737.
HLYDS66	2987	771565	1 - 508	15 - 522	
HLYDS84	2988	687991	1 - 533	15 - 547	AW080134, AA377730, AA358122, AL264743, AA913114, AL035766, AL193007, N20066,

AI469968, N35896, AI075744, AI312309, AI648558, AA001418, AI888752, AW023672, AA482711, AA384502, AI053471, AI305547, AI471543, AA344959, AA452563, AI685198, AA569468, AA448231, AI672135, AA448375, AA977743, AA318652, AA226634, AI71481, AI345459, AI336660, AI471534, AW302309, AI206785, AA452744, AI446464, AI133102, AI161181, AI049707, AW276817, AA837755, AI133862, AI469624, AI565581, AI171750, AI266576, AW167267, AI133164, AI358343, AI439360, F23279, AW243960, AA394271, AI679706, AI313166, TI5948, R77905, C75026, AI341664, AI679132, AA626678, F37169, AI683577, AI118911, AI815000, AA084715, AW008317, AA482768, AI921188, AA434484, AA938225, F32705, AI044864, AI038833, H64777, AA364429, AA913549, AA4680211, AA377621, F25203, AW131249, N25296, H00934, AI017415, AW272758, AA340960, AI005388, AI135405, C19038, AA480762, AI814735, R98967, AI871722, F31204, AA328169, AI523897, AI571512, AA558697, F36273, AI824562, AA569471, AA634227, AI493217, AA363989, AA515435, AI583594, AA078849, AA338642, AA134335, AI282661, TI6592, N70648, AA702605, AA320830, AA016286, AI047643, AI87483, AW338869, AI126035, AA180370, AI126051, AW272641, AI143242, C17838, AI205126, F18974, H69914, AA558060, AI355224, AW074398, AI838451, F04987, AA077817, F37286, AA515128, AA780929, AI672857, AC000052, AC004019, AF035397, AC004935, AC006474, AF003627, AF207550, AI021707, AC005314, AC004466, AC004066, AC004916, AC007387, D86993, AF000049, AC007156, AC004039, AI035071, AC005341, AI109759, AC007387, D86993, AF000049, AC007156, AC004134, AC004859, AP000311, AC007397, AI035079, AC009542, AC004065, AC009330, AC004973, AC005076, AI023284, AC009464, U62292, AI034549, AF169121, AP000142, AP000128, AP000206, AI109657, AI031177, AP000245, AC006450, AI109985, AC004966, AC005667, AI023880, AI133246, AC004745, AC004030, AP000966, AC005740, AB033056, AC009509, AC002301, AC005971, AC006035, AF042091, AP000090, AC005822, U95740, AC006287, AI132800, AI185116, AF147277, AB020668, AI109755, U85195, AC006071, AI049611, AI034343, AC004690, AC002375, AF000658, AC005250, AF091512, AC006324, AP000503, AC006318, AI035659, AP000558, AC006565, AC006596, D87675, U63721, AC005619, AC006019, AC008116, Z84572, AC005046, AI023513, AI031587, AC007543, AP000011, AI034429, AI133500, AC004765, AI008352, AF134726, AC004638, AI021391, AF0217403, AI031429, AI109628, AC005783, AC004034, AC002429, AC004028, AI022722, AC000379, AI096829, AC007917, AC002465, AC006946, AF006501, AF005264, AC005838, AP000115, AI049856, AI031846, AP000557, AC004139, AC003682, AF042090, Z49154, AC003003, AC006486, AI033525, AC009516, AC006008, Z84488, AC004531, Z98755, AC002433, AC005069, Z80899, AI109827, AC009989, AC005385, AC000119, AI133448, AC004773, AC002984, AC004848, AI003147, AF064861, AI034582, AC006195, AC005821, AC005159, AC000353, AC005274, AI078581, UI4702, AC006965, AC000159, AI031123,				
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HLVDS91	2989	775483	1 - 458	15 - 472	AL031229, U93237, AC005231, AC005180, AC007690, AL031575, AJ012197, Z68284, AC002564, AL050320, AL049831, AC005829, AL035458, AL034420, AC006026, AL096791, UI4714, UI4715, AC004087, AC002508, AC004895, AC005037, AL033327, AC005229, Z98304, AD000833, D83989, AL008722, AF109907, AL034370, AL031319, U73024, AL109847, AC006057, AF131217, AC004686, AL023353, U71218, AC004797, AL031311, AL050312, AC005911, AC006465, AC005412, AC007283, AC002073, Z81308, AL031432, AL049776, AC005516, AL049647, AL096701, U55182, AC004994, AL035420, AF051934, AC005800, Z97183, AP001039, AL031282, AL031012, AB077058, AC005211, AC005356, AC006048, U92032, AC010168, AB023058, AP000521, AL117355, AC005879, Z99716, AC004526, AF055066, and AL080243.
HLVDT03	2990	920268	1 - 557	15 - 571	AA482994.
HLVDT68	2991	526245	1 - 320	15 - 334	
HLVDL08	2992	959074	1 - 370	15 - 384	
HLVDV62	2993	927872	1 - 583	15 - 597	AA326846, A1074002, A1084046, AA187426, and AW453048.
HLVDX93	2994	669792	1 - 548	15 - 562	
HLVXDZ44	2995	716435	1 - 384	15 - 398	RI4337, AA485189, and AB030181.
HLVEB56	2996	710819	1 - 316	15 - 330	AP983188.
HLVED52	2997	931992	1 - 350	15 - 364	
HLVED59	2998	856383	1 - 688	15 - 702	AL374993, N94590, W23797, AA585403, AL383156, and AC000353.
HLVED65	2999	747763	1 - 213	15 - 227	H72741.
HLVED77	3000	615312	1 - 419	15 - 433	
HLVEE34	3002	703906	1 - 554	15 - 568	
HLVEE81	3003	488925	1 - 555	15 - 569	AA888665.
HLVEL47	3004	666448	1 - 563	15 - 577	
HLVEN93	3005	682176	1 - 612	15 - 626	
HLVEQ40	3006	710986	1 - 297	15 - 311	
HLVEQ73	3007	760566	1 - 339	15 - 353	
HLVER38	3008	709181	1 - 386	15 - 400	
HLVET03	3009	923834	1 - 447	15 - 461	AA164189.
HLVFA27	3010	682763	1 - 525	15 - 539	AA405746, A1479114, AA845235, A1766637, and A1361762.
HLVFA58	3011	835409	1 - 393	15 - 407	
HLVFC15	3012	923620	1 - 858	15 - 872	AA504562.
HLVFF10	3013	964109	1 - 563	15 - 577	AW085626, W24802, A1754926, AA527633, R63460, AW028376, R23449, AA465198, AA338395, A1797998, R963119, Y18000, AC004000, AC005971, AC004882, AC005529,

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HLVFF64	3014	746339	1 - 476	15 - 490	AA858380, AW269071, AW271095, AW302832, Z1284536, AL251563, AL252141, AL733946, AL733930, AL792695, AL792746, AL792842, AL252190, AL792856, AL080242, AC004876, AL004645, AC006111, AC000091, AC004169, AR036572, U91328, AC004771, AL031775, AB001523, Z99754, AC004652, AC006129, AC004509, AC004828, AL022329, Y07661, AD000684, and AC000026.
HLVFF64	3015	924558	1 - 529	15 - 543	AA287719, AB065921, and AL1418161.
HLVFFK47	3016	953988	1 - 423	15 - 437	AL061334, AW088202, AW162049, AW080134, AL570261, AL1929531, AW104748, AA482711, AL046409, AL357551, AP63720, AW174453, AL471481, AL341664, AP62050, AL344844, AW029038, AL049634, AL350211, AA581903, AL814735, NS3150, AL133636, AW166815, AL567674, AA610491, AL291268, AW193432, AL291124, AW302013, AL688846, AL809023, AL375710, AL339850, AA713815, AW265009, AW193265, AL284640, AA559290, AL561255, AL669453, AL761471, AA826303, R94721, T07451, AL801600, C05755, AA501600, AL679782, AL68745, AA594145, AA649642, AL613280, AL161095, AL722048, AL561060, AL589230, AL652057, AL625244, AL860020, AL283911, AW062724, AL120674, AW440836, AL469003, AL438643, AL531372, C04658, AA384752, AL049722, AA828704, AL251002, AL537955, AL350859, AW276827, AA513141, AL623002, AA316905, AL669443, AL357288, AL1610920, AA470969, AL370878, AL431303, AA513181, AA079831, AL446601, AL374809, AL345654, AA652764, AA302963, AL057547, AW079135, AL251436, AL364809, AA143516, AA806796, AA598824, AL198376, AL635818, T28550, AA340747, AL1918421, AA551503, AA491814, AL917271, F04478, AL859742, AL890348, AA084070, AA582911, AL1888518, AA843450, R08967, AW008212, AL654525, AL270117, AA847499, AL744995, AW238278, AW276817, AA513293, AW273218, AL301700, R97934, AW070892, AL21271, AL619997, AA934680, AL632868, AL564185, AL799642, AL371070, AL719805, AA364224, AA831375, AA348929, AL801591,

AW021583, T55213, AW088616, AW103981, AL042420, AI919029, N27329, AW265393, AI951863, AW117750, AA634146, AW300625, AA599920, AI151261, AA720702, AI634384, U51696, AA489775, AA837084, AI298710, AA832145, AA346458, AA947811, AW169537, AI418164, AA225230, AA664015, AA940977, AA634227, AI915293, W73048, AW131213, N29948, AI537030, AI921476, AI193007, AI828738, AI262909, AA577906, AA522942, AW247819, AI827234, AI376100, AI002834, AI921649, AA583955, AI038785, N43757, AW276435, AA644511, AA613345, AA364429, T06828, AA515051, AA486414, AI583594, AI708009, AA491831, AI601159, AI754955, AA970213, AI963095, AW303876, AI93144, AA603156, AA584201, F25199, AA653618, AW102955, AA598097, AI439210, AI344443, AW327868, AI133164, AA468022, AA502866, K71615, AA599026, AI053672, AI339440, AI289067, AA259245, C63277, AI821356, F01314, C05986, AA213741, AA502155, AI471543, S75201, AF015160, U57007, AF015162, U18396, AF015153, AF077058, AF015155, U12584, D83989, X75335, X53550, X54180, S75337, X54177, U18392, M87919, AF015167, U57005, U57006, AF015166, U18393, U18391, U18394, X55925, U18390, I51997, U02532, U57008, X55932, U14695, U18395, S77605, U12582, X74558, X54175, U14703, A39972, U02507, X55926, AF015154, X55930, AI132712, X62354, U18387, AF015151, X55931, X54179, X55924, AF134726, AF078581, L35531, AP000503, AC007934, X54181, X54178, AI121694, U14705, S70707, AL132800, U67801, U14694, U50871, AL035450, X53549, AC006596, AC008249, AF015157, U14701, U12580, U14719, X76629, AP001065, AC002477, AC005523, S70699, U67827, AF015171, AL049712, L47228, U14718, AF015156, AF015149, U18400, X28340, AC005808, AF038458, U14712, AL096776, AF015147, S70689, S70692, X55922, AI133241, AF045555, AP001068, AL023575, U66059, M37551, AL133500, AF015170, U14714, AC005619, AC005006, AF015165, AC002565, AC005081, U14713, AL031295, AL021154, U12583, AF140763, Z30979, U14716, AC007051, AC007919, AC005046, AL122003, AC007242, AJ011930, U14715, U14716, Z33856, AF060568, L47924, AF015158, M87916, Z26760, AL023882, AR000118, AL021391, U02531, AL133448, AF015163, AC004492, Z69706, AC004853, AC005535, AL121653, AJ003147, S70706, Z98051, U14698, AC000052, AC005328, AC007541, AF015168, AL121603, AL117330, Z86061, X88791, AC007225, U75931, AC001234, AC006486, AC005089, AC006249, U2581, U67829, AL135744, AC004814, AP000359, AC006455, U14707, AC004019, AP000114, AC004884, Z93241, AL034423, Z74739, AL121748, AC005913, U14706, AF005150, X55928, U18398, D87675, U57009, AC005763, AC007022, AF207350, AC003045, AL049757, AC002086, U67233, U57004, U14700, U18399, Z79422, U14689, U14702, X52851, AP001067, AC004491, AL049777, AL049836, M37547, AC002465, AL031681, M87923, AP000402, AL096701, S42659, AL109758, AD000684, AC000785, AC030355, AC006476, AL031258, AC006285, AL049776, U67211, Z94044, U67831, U67231, AL021878, AC006511, AP000517, AP000513, AL121757, AC006128, AL01670, AL078604, AP000090, AC006277, AC007191, AL031230, AC005866, AC003029, AC005295, AC004796,				
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HLFYF083	3017	863918	1 - 449	15 - 463
HLFYF23	3018	675373	1 - 515	15 - 529
HLFYF38	3019	709184	1 - 108	15 - 122
HLFYF64	3020	936051	1 - 429	15 - 443
HLFYF27	3021	682776	1 - 168	15 - 182
HLFYF40	3022	710851	1 - 490	15 - 504
HLFYF96	3023	916452	1 - 232	15 - 246
HLFYF33	3024	719251	1 - 300	15 - 314
				AA594591.
				AA69555, Z33443, N76673, AA069889, AA281224, Z774620, AL031602, Z770227, AP0003336, AL022577, AL035653, AP000215, AC004646, AB006903, A1239329, AL078477, AC004081, AF186194, Z95703, AC005726, AF000084, and AP000221.
				AC002458, AC005412, and AC007065.
				N76624, and AC005740.
				AA187732, and AA706963.
				AA332500, A1024945, A1493761, AA340178, A1192435, AA032024, AA452969, AA447052, A1038406, AA575836, A1143749, W38849, AA643304, AA811387, AA296364, AA829930, A1783713, AA568692, A1672767, W58767, AA443666, A1708679, A1761290, D82533.
				AA890233, W56507, A1312651, C08835, A1247870, AA639508, AA847787, A1338935, C05751, N80205, AA412478, AA828434, AA928571, A1741989, D83838, A1078010, A1911125, A1888718, AA814538, D83836, A1206832, A1241436, AA628649, AA676899, W52897, A1683306, H44229, A1932299, W50778, AA897470, AA452830, N93132, C06275, AA523873, R10897, AA659136, N69930, W38563, AA715017, U57692, and U57691.
HLFYF78	3025	660000	1 - 477	15 - 491
HLFYGA32	3026	698860	1 - 543	15 - 557
HLFYGA46	3027	932292	1 - 754	15 - 768
HLFYGC11	3028	966480	1 - 461	15 - 475
HLFYGC18	3029	665721	1 - 543	15 - 557
HLFYGC63	3030	744739	1 - 526	15 - 540
				AA381269, A1859834, AA663966, A1750955, A1350211, AW193265, A1537077, AA490183, A1434695, AA515905, AA577906, A1151407, A1613280, AW276827, AA857486, A1754658, A1118991, AA483223, A1979003, A1048925, A1744995, A1041706, A1623002, A1038705, A17080811, AA594145, A1713891, AA469451, AA493708, H73230, A1860013, A1379719, T47936, AW050734, AW275719, A1433247, A1040382, H88666, AW276435, A1814735, AA503258, AW263864, A1859946, R17793, AA177061, AA652764, F36273, AA665021, A1635279, A1061313, AA226153, AA721524, A1119691, A1122223, AA493621, AA488746, N76766, A1933714, A1570943, AA846876, AA587604, A1745151, AA806796, A17103758, A1585501, AA502963, A17337454, AA613203, A1204304, AA599480, A1561000, AA679663, AA569471, A17129001, A17338086, A1623898, AA503154, AW408707, A1779783, A1478115, A1708444, A1865213, A1708009, AA598425, N53150, A1446474, AA635382, AW021583.

				AL654247, AW304805, AA765170, AL753488, AA136172, AW020992, AL755214, AL754567, AL623899, AL133164, AL598003, AL367497, AL610607, AA789192, AA535661, AC003007, AC005632, AC002310, AC007191, AC005562, AL049557, Z85195, AL022316, AC002470, AB00658, AC002316, AC004987, AC006285, AC004832, Z82214, AC007298, AC003339, AL022721, AC008115, AC003553, AC002400, U95742, AC005081, AL023803, AC005702, AC004890, AD000092, AC007216, Z93241, AC002429, AL049829, AC008372, AC005808, UA7924, Z98051, AC005529, AC004859, AC006312, AC005940, AC005666, Z85986, AP000359, AL008718, AL050402, AC007510, AL096829, AC004933, AL023531, AC004760, AL049758, AC005046, AP001550, AL035450, AC004647, AL031311, AC004638, AF196779, AC003051, AL133500, AL079340, AL049776, AP00123, AP000655, AP00170, AC003071, Z83822, AL049709, AL022476, AL121748, AC005763, AL031284, AC003098, D87675, AC006581, AC006111, AC005527, AC006040, AL031387, AC004019, AC003664, Z69917, AL008730, AL049745, AC002301, AC006057, AL031432, AC002312, AL034549, AL023575, AC005229, AL080250, U80017, AL078463, AC004477, AL049869, AC016830, AC004041, AL133485, AC007666, AC009516, AL031650, AL022165, AL024498, AC007227, AC006011, AL141309, AL034384, AC007731, AP000459, AC004963, Z97054, AP00552, AC004699, AC003982, AB000882, AF027550, AC005500, AC007051, AL003147, AC007387, AC005216, AL078581, AP000512, AL022302, AL022323, AL035683, AC005209, AC005740, AC007285, AL11168, Z83844, AC002430, AL049872, AC004685, AC004686, AB023049, AC004584, AC020663, AL121934, AC007030, AC004953, AC005065, AC005291, AC007151, AC005944, AC005844, AC002395, AC007384, AL135745, AC004523, AC005821, AC002303, AC002383, AL080243, AP000357, AP001051, AC007076, AL035608, AC000039, AC002041, AC005694, AC012085, AC004167, AC004884, AC005412, AL031719, AC003684, AC006030, AC000134, Z83845, AL035659, AC005755, AC007919, AL022313, AC004975, AC000052, AC006120, AC005128, AL034351, AL133245, AC007676, AL031286, AL031588, AL021154, AC006486, AC002549, AC004596, AC005015, U07562, AC004257, AL049779, AC007707, AP000513, AL031428, AC005089, AC007363, AL109865, AL139054, AL035451, AC004999, AP000252, AF029308, AC007225, AC016025, U66059, AC002350, AC004386, Z94056, AC006928, AL096710, AL035690, AL031662, Z75741, AC007877, AC005969, AL117330, AL035460, AL035420, AC006288, AC006006, AC007774, AC005399, AC006552, AL109985, AC008101, AC010168, AC007564, AL022328, AC006211, AP067844, AC005393, AC002425, AC007226, AF053536, AC004496, AC006153, AL035688, AC006538, AC006030, AL136297, AC006130, AC004783, AC004526, AL009179, AC004010, AC005548, AC004381, AP000134, and AP000212.
HLYG28	3031	686173	1 - 565	15 - 579
HLYG153	3032	871636	1 - 870	15 - 884
HLYG123	3033	656698	1 - 245	15 - 259
HLYGK24	3034	676907	1 - 267	15 - 281

HLYGK77	3035	732462	1 - 433	15 - 447	AL035410.
HLYGK82	3036	698553	1 - 360	15 - 374	
HLYGK96	3037	977628	1 - 467	15 - 481	
HLYGM41	3038	712099	1 - 387	15 - 401	AA513861.
HLYGM43	3039	690748	1 - 629	15 - 643	AA173740.
HLYGP15	3040	920077	1 - 539	15 - 553	
HLYGP26	3041	790301	1 - 415	15 - 429	H56560, R06615, T83748, N92020, AA7070219, H90265, and N63876.
HLYQP46	3042	832311	1 - 982	15 - 996	AL004177, AW051735, AP923749, AL635200, AL201473, AT766831, AL352428, AA866576, AL830688, AD936241, AW393044, AW574354, AL318183, AW393061, AW374438, AW05539, AW364275, AL3300050, AA909208, AL273127, AA814294, AA705616, AL698332, AL814050, AL731218, T27697, AA878157, N56436, AL224032, AL540961, AA291160, N35079, AW402662, CL6472, CL6435, H99331, AW408278, and D25278.
HLYGR39	3043	744849	1 - 341	15 - 355	AC004777.
HLYGV02	3044	836376	1 - 389	15 - 403	
HLYGV07	3045	879387	1 - 489	15 - 503	T87263, H94155, and AA053829.
HLYGV66	3046	697627	1 - 600	15 - 614	
HLYHB85	3047	773990	1 - 548	15 - 562	
HLYHG09	3048	590369	1 - 597	15 - 611	AA400056, H69347, H69346, AL021155, AL031588, and AL034418.
HLYHG18	3049	665713	1 - 439	15 - 634	AA075210.
HLYHG45	3050	711741	1 - 620	15 - 634	AA3300319.
HLYHIT5	3051	767066	1 - 550	15 - 564	AW198107, AA917906, Z36759, H87259, AL521360, AL247128, AL207422, AA834350, AA601230, H478335, AL031657, AC000379, AC005971, AL0212165, AC005037, AL049776, AL001391, AC007938, AC004602, Z98036, AL236694, AL034549, AL022238, AC006441, AL001527, AF047825, AF196989, AL022328, AL049843, AC002312, AL031387, AC003695, AC002663, AC006237, AP000563, AC005482, Z95115, AC005531, AC004882, AL080243, AP000211, AP000133, AP000509, AL021878, AC004797, AL049869, AL049594, Z83840, AL21653, AC006117, AC002091, Z93244, AL035086, AC005332, AP000126, AP000204, AL079342, AL109839, AC005300, AC005206, AC005839, AC003663, AL109963, AP000553, AL098372, AF134726, AC005031, AC006312, D84394, AC005519, AC005667, AC004087, AC007050, AC005899, AC004998, AC002477, AC005808, AC005089, AL031295, AC005183, AL109984, AC002418, AL022327, AC003035, AC006515, AC009311, AC004099, AL049694, AL109738, AC004491, AC005015, AC004815, AC006515, AL096712, AC004386, AL021579, AC002470, AL096761, AC002740, AP000704, AC005017, AC006501, AC004228, AC005562, L31848, Z84476, AC012384, AL031407, AL008723, AC009516, AL031983, AC005018, AL049552, AF196971, AL133163, AC005069, AC005529, AC004525, AL022311, and AC007114.



HLVHK02	3052	919199	1 - 525	15 - 539	AC004472.
HLVHL74	3053	765292	1 - 534	15 - 548	AA539182, AA573068, AA491823, AC005386, AP000692, AC004662, AC007386, AC007738, AL121653, AC002330, AC002404, AL022320, L05367, AL078581, AC004921, and AL096701.
HLVHNM6	3054	784724	1 - 461	15 - 475	AA569573, and AA908998.
HLVHN47	3055	720019	1 - 570	15 - 584	HL15547, F02465, and N73834.
HLVHN67	3056	920551	1 - 708	15 - 722	AW387103, R67677, AW404276, H03065, AW403805, AW387108, AL360165, AL891114, AL346739, AA115361, AW410383, AA476376, AH493775, AL373735, AW005762, AL683639, AA814726, AL885010, AL707165, N77394, N52435, AA548360, AA804529, AL355842, Z43872, H12922, F11250, and AET16915.
HLVHQ49	3057	659883	1 - 262	15 - 276	AA380617, and AC005041.
HLVHQ79	3058	751428	1 - 548	15 - 562	H57483, AL888261, R02056, and AA594742.
HMAAA35	3059	773472	1 - 507	15 - 521	T73196, AC007182, and Z64784.
HMAAE04	3060	385644	1 - 317	15 - 331	
HMAAE83	3061	745077	1 - 420	15 - 434	
HMAAF10	3062	968199	1 - 413	15 - 427	
HMABI56	3063	907640	1 - 401	15 - 415	
HMABN34	3064	706264	1 - 459	15 - 473	AW445199, AL291885, AL796788, AL291659, AL681688, AL586930, AL863432, and AL371323.
					AL523278.
					AL865938, AA608751, AA639946, AL865807, AW068316, AA528500, AA365586, AA603530, AL814739, AL874201, AB023048, L34294, AC004659, AC005696, AL080243, AC004796, AC006153, U95742, Z94721, AC004821, Z98745, AC007216, AC005678, AFI96779, Z98742, L78810, AC004851, AC007055, AL133448, Z85987, AC005081, AP000563, AC002128, AC004812, AC002470, AP000133, AC004491, AC006130, AL021154, AP000558, Z82195, AL109682, AL022323, AP000211, AL031311, AP000510, AC004150, AC005200, AL031662, AL034420, AC004859, AC006111, D91326, AL035587, AC005914, AF060568, AC000159, AL022322, AP000300, AC003010, AP000555, AC007546, AP000251, AL049776, AC005529, AC005519, AC009516, N59230, AC006571, AC004522, AC004645, AC004019, D87011, Z93930, Y18000, AC005747, AC005015, L44140, AL136295, AC002544, AC005412, AC005067, AC003070, AC004834, AL021808, AL031737, Y14320, Z93241, AL121769, U29895, AC005358, AL049643, AP000030, and AC0005940.
HMABQ71	3065	729831	1 - 500	15 - 514	
HMACS56	3066	733395	1 - 435	15 - 449	AW788595, AA465415, AA769410, AA465345, AA468904, and AA971248.
HMAAD02	3067	920088	1 - 205	15 - 219	
HMAAD17	3068	780874	1 - 143	15 - 157	
HMAAD33	3069	970491	1 - 431	15 - 445	
HMAADX1	3070	697994	1 - 248	15 - 262	AW452893, Z25062, AL215990, AL099527, AL147565, AL004649, AL291404, AL669727, AL820914, AA479756, AW005022, AA831051, F00452, AA825896, AA885489, AA725719, AA588432, AW071714, AA583305, AW451815, and AA969033.

HMAJ255	3071	939916	1 - 732	15 - 746	AW177706.
HMAJ62	3072	744337	1 - 347	15 - 361	
HMAJF057	3073	734688	1 - 322	15 - 336	
HMAJF77	3074	856267	1 - 368	15 - 382	AA362198, W21176, H87432, and AA302842.
HMAJF35	3075	925049	1 - 427	15 - 441	
HMAJF55	3076	73286	1 - 417	15 - 431	
HMAJF30	3077	692598	1 - 500	15 - 514	AW392670, Z99396, AW3784394, AW372827, AW363220, AL119497, AL119341, AL119443, AL119496, AL119319, AL119335, AL119457, AL119324, U46341, AL119483, AL119484, AL119363, AL119391, U46351, AL119335, AL119522, AL119396, AL119418, U46350, U46349, AL134902, AL042975, U46347, AL119444, U46346, AL042551, AL037205, AL134536, AL042450, AL042614, AL119439, AL042433, AL042984, AL119399, AL042965, AL119401, AL134920, U46345, AL134527, AL134525, AL134538, AL142131, AL043019, AL042970, AL119488, AL042896, AL042544, AL043029, AL042542, AL043003, AL119464, AL037027, AL036765, AC005065, A81671, AR060234, AR066494, AR054110, AB056436, and AR060979.
HMAJF42	3078	778521	1 - 409	15 - 423	AW020992, AA312190, AB077395, AA356734, AW0403328, AA357475, AA352723, AW401989, AA352880, AL631812, AA347435, AA378937, AA360333, AA347660, AA347524, AW250682, T80305, N34180, AL191246, AF112209, AF052504, U72519, U70211, and AF131766.
HMAJF261	3079	741754	1 - 90	15 - 104	
HMAJGK69	3080	723186	1 - 535	15 - 549	
HMAJH62	3081	736039	1 - 321	15 - 335	
HMAJH804	3082	694042	1 - 98	15 - 112	
HMAJH830	3083	823422	1 - 147	15 - 161	AL035413.
HMAJH569	3084	735355	1 - 469	15 - 483	
HMAJIC22	3085	947905	1 - 423	15 - 437	
HMAJIP90	3086	681320	1 - 308	15 - 322	
HMAJUI62	3087	856278	1 - 539	15 - 553	
HMAJY01	3088	916259	1 - 459	15 - 473	AA779075, AL037910, AA837351, AL134330, AA993198, AL084012, AW403720, AA300052, AA173970, AL045709, AA393847, AA779783, AA811580, R59660, AA262752, AA665257, AL570943, AL978712, AL377413, AL814721, AA059415, AV270619, AA568826, AA664235, AL903081, AA159516, AA252641, AC006965, AC003687, AC005741, AL049745, AC003738, AF118808, AC004534, AC004841, AF121782, AL035684, AL034402, AF124523, AL031285, AL080317, AL132987, AP000961, AC002351, AL050338, AL133246, AL008709, AL000060, AL035089, AL020990, AL049838, AC002385, AC005610, Z99495, and AC006368.
HMAJKA11	3089	801917	1 - 1707	15 - 1721	
HMAJF82	3090	856311	1 - 603	15 - 617	
HMAJLL66	3091	956195	1 - 496	15 - 510	AL8226091, AA580077, AL1359456, AL362274, AL361512, AA861038, AA961076, AW008827,

HMAA69	3092	975074	1 - 431	15 - 445	15 - 2674	AI658621, AI66484, and AC000392.
HMAA69	3093	955999	1 - 2660	15 - 2674	AI049648:	AA780265, AI921096, AI766065, W63619, AA399960, AI912594, AW204723, AW300114, AW182579, AI681695, AI634542, AW300127, AW134790, AI672402, AI632484, AI991208, AI921108, AW273778, AI672557, AA829864, AI887668, AA237046, AI498167, AW274451, AI703437, AI870323, AI713566, AI688759, AA455660, AI333733, AI143030, HI8069, W73117, AI870510, AW006266, A977594, AI699606, AI862877, AA167089, AA023847, AA548871, AA602625, W44772, N24939, AA485904, AA668693, AI268864, AA281074, AI130979, AW003963, AA446601, AW189836, AI971599, AI273393, AI392880, AW197453, AI278947, AI351669, N62971, AI308071, AI936847, H98724, AA836448, AI440191, AI989522, AI011285, AI589281, AA293010, AA827358, AI339270, AA459005, AA455715, AI860721, AI302146, AA524204, AA305574, AI364520, AI090733, N66064, H97021, AA135737, AA432293, H72683, N24292, AW190461, AI027367, W93402, AI912153, AA962416, AA719182, AI367284, AW205556, AA911230, AA029982, AA399292, R11703, D25619, H97049, AI699130, N23812, AA952896, N36243, AI68162, AA723573, AA476536, AI214579, AA594325, AI694799, AA975509, AI50983, AI122611, N35346, R61136, AA459224, AA024419, AA044981, AA971127, AA976353, AI631939, AW023248, AA806738, H25442, AI572175, AA858127, AA278458, AA034091, W37092, AI370017, AA024420, D82669, H25487, I35969, TS3721, N22469, AI473134, AW150562, I37605, AI383106, R12119, I36116, AI188357, AA988155, H17376, I39765, AI823318, I37671, I39737, AI341595, AA906253, AA715091, N99439, AI611116, N44714, AA281192, I39788, I39778, AA203543, N72004, AA383416, F04896, HI0770, Z40617, AA857399, I398192, T98193, AI918795, AW274013, AA907736, AA906256, Z43451, I39764, I17433, AW089288, AI696191, AI692608, AI638777, R47794, AA459004, AA700917, AW378486, HI873655, I39745, AW057906, AA301109, AI368524, AI873204, R40787, W93614, W61128, AI471097, AI935327, AA927938, AA904804, AA010846, N95657, AA034960, HI0769, AA091950, N79875, N56479, AW138315, R50437, AA236848, AA724749, AA383283, AI001837, AA365102, AA093695, AI765014, AA471159, AI686101, H72682, AW362319, R07569, and AI091461.
HMACA27	3094	959557	1 - 553	15 - 567		AI817881, AW271350, AI452595, AI698804, and AI072316.
HMACA60	3095	586435	1 - 288	15 - 302		AA179308, AA122166, AA166791, Z25347, N41968, AI087936, AA505715, AA037848, AA751931, AA748014, AA740734, AI193280, AA610857, and I79986.
HMACA01	3096	916843	1 - 606	15 - 620		
HMACA025	3097	856241	1 - 255	15 - 269		
HMACA W49	3098	974119	1 - 555	15 - 569		
HMACA267	3099	751804	1 - 574	15 - 588		R95734, AA702224, AA557260, AW304938, AI761850, and AI223183.
HMCB05	3100	932146	1 - 348	15 - 362		
HMCCA45	3101	722027	1 - 430	15 - 444		

HMCCB30	3102	692830	1-381	15-395	AC004682.
HMCCB62	3103	747136	1-229	15-243	AW135935, AW138952, AW137754, AW135962, AW138823, AW138870, AW136428, AW207624, AW139869, AW341135, AW458161, AW341795, AW136474, AW170280, AW1928857, AW105685, AW1692679, AW340949, AW160249, AW223102, AW341157, AW162800, AW1680872, AW1692602, AW1891255, AW1724456, AW179139, AW178332, AW457094, AW168190, AW1797065, AW1689805, AW070376, AW419338, AW117584, AW458888, AW593423, AW150020, AW062985, and AW005829.
HMCCB78	3104	773660	1-290	15-304	AW298470, AW082724, AW104868, AW484442, N20641, AW018013, AW4776579, AW2993387, AW124624, AW298354, AW480512, AW373473, AW1280305, AW923469, RS0142, AW4837153, AW921954, and AW174861.
HMCCDB42	3105	713051	1-474	15-488	
HMCCDM32	3106	699249	1-432	15-446	AW448432, RW7507, AW001526, AW102031, AA443065, W33067, F18394, AW243706, T51965, AW461430, AW174222, AW1049662, AW629597, AW742320, R44592, AW1536798, AW5161335, AW630030, AW659856, AW670124, AW330727, N64437, R79496, AW119025, AW364193, AW642265, T65735, AW195798, AW196052, R78564, AW481365, AW453530, AW270284, AW481375, AW4669387, T29360, AW365248, AW825793, W78150, AW620390, T60791, AW1874201, AW484148, AW173582, AW747472, AW747620, AW92528, AW284583, AW528316, AW149874, AW477771, H39713, H44095, AW341892, AW446464, AW169687, AA312878, AA378420, R81240, H14935, AW745560, AW935789, T71030, AW984387, AA244415, AW828696, AA745431, AW679493, AW468134, AW226364, AW648280, H85382, RL3151, AW01600, AW174535, AW454522, AW658235, C18648, AW573695, AW061089, W77950, AW720583, AW551575, H04821, AW01591, AW135119, AW134484, AW161997, AW641103, AW029526, H14931, T71998, AW669572, AW298977, AW225141, AW513939, AW630834, RS4885, AW265809, AW1439360, N55273, AW499134, AW829405, T15977, R66997, AW921188, AW593533, AW788883, W45336, AW699501, AW192695, H26689, AW157229, AW177063, AW575834, AW172684, AW118911, AW533450, AW1379719, AW565581, AW42863, AW327868, AW533038, AW613261, AW118911, AW533450, AW1871992, T91024, W192108, H956267, AW1048626, AW533092, AW101338, AW196020, AW164251, AW1340453, W37913, AW064864, AW041382, AW192337, AW557323, AW034177, N87410, AW525898, H73070, AW003663, AW007258, AW051521, AW006511, AW008079, Z85986, AW1133485, AW006210, AW004276, AW004859, AW007919, AW004194, AW033551, AW005255, AW109984, AW000338, AW000216, AW008101, AW031774, W02050, AW004638, Z85987, W90297, AW010349, AW016830, AW128525, AW004383, AW124523, AW147341, W16457, Z99734, D16583, AW005759, AW028807, L16016, W07790, Z84466, AW600394, X33467, Z99734, D16583, AW005759, AW001056, AW005564, AW005542, AW006698, AW007766, AW021977, AW1008716, AW1808245, AW020311, AW005591, AW007401, AW117325, AW1049758, AW004776, AW004001, AW1035073, AW001905, AW006062, AW004891, Z83841, AW005208, AW007243, AW004468, AW002472, AW002068, AW005548, AW007664, AW013651, AW005544, AW008012, AW021395.

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HMCDN22	3107	895981	1 - 615	15 - 629	AW264938, AA039677, A1554747, AL696900, AL042720, AL045791, AL040219, AA614566, AA459899, AL697044, AA077186, AL201384, AA040234, AA622883, T62577, AL076623, AL247893, AA322208, AA074393, AL858610, AA280172, R10147, AA308856, AL267803, AL870586, AL046240, AA757892, AL048960, AA249116, AL267805, AA906248, AL267724, AW372467, AA999887, H19634, AL203658, AA910849, AA906244, H19636, AL129946, AL049014, AL289213, AL656920, AA996066, AW197305, AL0078294, AA345106, AL042573, R10553, N22657, AA127979, AC006014, AC005488, AL007798, AL137492, AC005071, AF030453, and AC005088.
HMCDT92	3108	974588	1 - 483	15 - 497	AF092170, AF094827, AF053316, AF073481, and AF153472.
HMCF71	3109	760034	1 - 99	15 - 113	AC005799.
HMCFB22	3110	963794	1 - 508	15 - 522	AL117694.
HMCFR51	3111	725425	1 - 414	15 - 428	AL117694.
HMCFW22	3112	674074	1 - 736	15 - 750	AL117694.
HMCGG31	3113	697533	1 - 373	15 - 387	AL117694.
HMCGJ36	3114	708050	1 - 149	15 - 163	AL117694.
HMCGN29	3115	690288	1 - 347	15 - 361	AL117694.
HMCGW54	3116	846134	1 - 339	15 - 353	AL117694.
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HMCXY77	3117	753133	1 - 389	15 - 403	AW352117, AW177440, AW375405, AW377671, AW178893, AW360811, AW35959, AW36296, AW360844, T03269, AW360817, AW179332, C14389, AW179328, T48593, AW375406, D80439, AW378534, D58283, AW377672, AW179023, AW178905, D59859, D80022, C14331, D80166, AW177731, D80212, D80195, D80193, D59927, D59467, D51423, D59619, D80247, AW378528, D80210, AW178906, D51799, D80391, D80164, D59275, AW178762, D80240, D80253, D80045, D80038, AW179019, D80043, D59787, D80227, D59502, AA305409, AW378532, AW360834, AW177501, AW177511, AW377676, D81030, D81026, D80269, C14014, D80268, D80366, D80196, D80188, D51022, D80248, D59979, D80219, AW378533, D80522, D50995, D80302, C06015, D51200, AA305578, AW179020, C15076, D59610, D51060, AW352171, C14429, D57483, D51103, AW352170, D59889, D80133, AW178907, AW177733, AW178908, AW179024, D80024, AA514186, AA514188, D80157, AW178911, D80378, D45260, AW179329, AW177505, AW177456, AW178775, AW367950, D80241, AW178909, AW176467, AW179004, D80251, AW178980, AW178986, AW178914, AW178774, AW178754, AW179018, AW352158, D80390, D80314, AA285331, C03092, C75259, AW378539, AW378543, AW378525, AW378540, AW352163, C05695, AW525923, AW178781, FL3647, AW360855, AW525913, AW525917, AA514184, AW527774, AW525925, AF123263, L50126, L50132, L50128, L50133, AR066488, AR016514, Y17187, Y17188, A94995, Y12724, AR028859, AR060138, A84916, A45456, A67220, D50010, D89785, A62300, A62298, Y09669, AB028859, A82595, A78862, D34614, D26022, AR060385, A30438, AJ132110, AR018138, A26615, AR052274, A43192, AR008278, X67135, A43190, AR038669, AF058696, A25909, AG3261, D88547, X82626, AR008443, AB002449, D13509, A70867, AR062872, AB019242, AR016691, AR016690, U46128, AR025207, A64136, A68321, AR060133, AR008408, AR032065, and X68127.
HMCHE16	3119	856332	1 - 403	15 - 417	AA380953, and AA917719.
HMCCHG76	3120	769734	1 - 498	15 - 512	AL628096.
HMCCHK22	3121	974585	1 - 627	15 - 641	
HMCCLA10	3122	963791	1 - 327	15 - 341	
HMCCLA94	3123	855999	1 - 325	15 - 339	
HMCCHK90	3124	785596	1 - 389	15 - 403	AL381684.
HMCIS32	3125	698541	1 - 373	15 - 387	
HMCCKC30	3126	671952	1 - 354	15 - 368	
HMMABAB9	3127	462502	1 - 356	15 - 370	D29160.
HMMACI10	3128	964846	1 - 299	15 - 313	AA468110.
HMMACI19	3129	953580	1 - 342	15 - 356	AA689256.
HMMAC79	3130	577951	1 - 443	15 - 457	

HMMAD06	3131	935734	1 - 388	15 - 402	AL031053.
HMMAD35	3132	964749	1 - 817	15 - 831	AL281624, AWA50798, and AC002302.
HMMAD40	3133	666181	1 - 431	15 - 445	AC007165.
HMMAD58	3134	891329	1 - 668	15 - 682	AP000556, AP000552, AP000557, AP000128, AP000206, and AP000245.
HMMABE12	3135	970892	1 - 534	15 - 548	
HMMABE43	3136	971581	1 - 344	15 - 358	
HMMAT44	3137	855916	1 - 354	15 - 368	
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HMMMAF70	3138	577918	1 - 695	15 - 709	W05478, R27063, R23185, AA48346, AA744630, N71117, AA662694, AI610124, AL041926, X93207, and X93208.
HMMMAF73	3139	506275	1 - 382	15 - 396	
HMMMAH23	3140	677861	1 - 296	15 - 310	H72232, R47235, AC007993, Z98941, AL022336, and L44140.
HMMMAH45	3141	674953	1 - 70	15 - 84	U61225, U61243, U60971, U61239, AC004883, U57834, and AF184614.
HMMMAI03	3142	860715	1 - 299	15 - 313	
HMMMAI56	3143	734563	1 - 306	15 - 320	
HMMMAI61	3144	718876	1 - 465	15 - 479	AI355246, AW340905, AI249688, N57681, AA577824, AA904211, AL049630, AI038304, AW265279, AI366180, AE009972, R93919, AI762528, AI280266, AW265276, AI962030, AI754367, H29914, AI569100, AW192599, F35684, AW105463, AI755214, AW268090, AI953360, AI889579, AA584594, AA342238, AI306717, AI445373, AI653776, AI271762, AI268019, AI277783, AW022796, AI080307, AI824541, AI050076, AW082104, AA666215, AI754105, AW131356, AW736488, AW084173, AI283938, AI120282, AI133514, AA302982, AA558404, T03928, AA018923, AI923052, AA578492, AW301483, AI049845, R67701, AA456149, AA604831, AA297776, T40629, AW237905, AA302812, AA363027, AI885465, AI281818, AI720403, AW089625, AA487209, AA714190, AI634323, AA206707, AA610255, AW051819, AI049676, AA910941, AW337526, AW166641, AA847704, AI679045, AI250552, AI243793, AI251034, AA551798, H90114, AI254770, AI284543, AA714073, AI054090, AW029515, AI278972, AA219349, AW028950, AW265688, AA678932, AA484892, AA440568, AA626840, AI567391, AW265126, AI217131, W39287, AI049534, AI679759, AA493808, AA371410, AI247101, AI801479, AA846923, AA102737, AI185394, AA564925, AA630947, F34914, AA218684, AW129188, R86977, AA084320, AL079734, AW272599, AA618035, AA804694, H63758, AI354330, AI369076, AW328331, AI520925, H40478, AA947265, AI246996, AI565084, AA501614, AA838120, AW242031, AI251284, AI251203, AI223626, H94979, AI249853, AI446336, AI733856, AW008184, AA598927, AA458534, AA632556, AW081485, AA300177, AA535756, AW328330, AI242614, AI066646, AA629888, AI751753, F01222, AW081610, AI576628, AA877092, AW192402, T94394, AI431513, AI4827875, AI8770951, AI955029, W45016, AA535216, AI246192, AA557911, AA502110, AA504051, AI417586, AA590080, AA132953, AA493789, AI358712, AI256019, AA873303, H060935, AW162697, H84412, T71936, U89337, AI049776, AI133312, AC005736, AL031597, AC007225, AF053356, AC002492, AC005058, AC003992, AC005899, AC004230, AL021920, AC002312, AL122020, AC007690, AF109907, AI022717, AL031602, AC006960, AI020997, Z95115,



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HMMAL18	3145	666195	1 - 335	15 - 349
HMMAL28	3146	677446	1 - 419	15 - 433
HMMAL63	3147	744861	1 - 422	15 - 436

AL109952, UI16302, Z99716, AC002565, U55184, AL049869, U95737, AC006571, AC007686, AL031120, AC006344, AC004000, AC008984, AF027390, AL050348, AJ251973, AL049757, AL035420, AC004832, AL096791, AL049780, AL118512, AC005527, AF001054, AL0309175, AC006948, AL121653, L47124, AC002056, AL035079, AF003529, AC003085, AL031584, AC004967, U91324, AC004257, AF096767, AC002045, AC006449, AP000201, AP000065, AC005972, AC006468, AP000474, Z99570, AL096703, AC003963, AL031319, AP000097, AL035400, AC004817, AC004020, and AC000134.					
AL0989372, and AL031589.	15 - 451	1 - 437	666199	3148	HMMAP18
AL046246.	15 - 469	1 - 455	717599	3149	HMMAP45
	15 - 425	1 - 411	668827	3150	HMMAP66
	15 - 407	1 - 393	671947	3151	HMMAP72
	15 - 496	1 - 482	739304	3152	HMMAPQ04
AA773473, AA532875, AL207476, AA745302, AL370170, T94072, R52008, AL354333, F33490, HI13120, H90114, AA335519, AA525807, HI15295, AL432298, AA535483, AA713705, AA553332, AA482953, AA214227, AL18661, F35902, F23307, F00211, A W080215, A W381847, A W381904, AA713735, AL054414, H73550, AA626411, AL445774, AL620266, AA828897, AB033681, AB11647, AA018369, W45205, AA425924, AA364006, AL042310, AA626595, AA372881, AA937809, AL192293, AL925462, AA092862, T83057, AA363003, AA384207, C15362, H80989, AA629568, AL12090, AL690497, AA525379, AA856841, AL312784, AL733717, AA513884, AA376358, AA382746, N21300, AA715418, AF047825, AL035405, AL031602, AC005244, Z93241, Z49236, AL035659, AC005295, Z98884, AL031848, U63721, AC004128, AL034379, AC004988, AC002369, AC005828, AL121754, AL022336, AL031291, AC000120, AC004811, U95741, AC005182, AC002416, AC005086, AC002107, AC002106, AP000065, AL133448, AC008928, AL096701, AC005793, AP000270, AL031283, AC002477, AP001172, AC004631, AF148808, AL022327, Z93023, AB015355, AC006101, AC002511, AL122020, AC004967, AC002091, AC004821, AC005914, AP000304, AP000047, AP000032, AP000103, AP000115, AC004801, AC004993, AL049760, AC005993, AL035450, AF207550, AL117694, AC005049, Z98044, AL024498, AC007058, AL022163, AC005527, AL121769, AD000812, AC005049, AP000450, AC005510, AC007226, AC006312, AC000305, AC006476, AC006057, AC007546, AC003041, AL049829, AL031597, AF024533, AC005488, AL021453, AC005529, AC000070, AC005512, AL049548, AC006365, AF031078, AF030876, AL034348, AC005430, AJ010770, AL109628, AB020863, AC002352, AC002126, U62317, AF196972, AC005539, AL1109552, AC005324, AC005880, AL109623, AL049692, AC005264, AL1132712, AC0090946, AC006409, AC003563, AC002301, Z82178, AC005280, AL117258, AC005578, AL096766, AL049570, AC004106, AL135879, AL121790, AC004460, Z97832, AP000320, AL096765, Z98200, AC007192, AL008718, AC006077, AL049776, Z82215, AF196969, AL135960, AL131016, AF015416, AC004525, AC002303, Z85996, AC007308, AC007227, AC003378, Z68192, AC005105, AC006014, AC005088, AP000510, AL049301, AC002319, AL022726,					

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				15 - 614	AF039185, H94332, R18760, Z44908, AS191051, AL022238, AL121580, AL008721, AF178030, AC005694, Y18000, AL133224, and AC005529.
				15 - 458	AA501441, AA632988, AA714955, AA618240, AR89579, H16358, AA136253, AA664126, AA719091, T94394, AA136477, AL355246, AW019964, H68343, AL306717, AV002891, W95552, AA368329, AW373542, AA494057, AA835778, AW237905, AA055422, AA482792, AL054090, AA630854, AL246061, R93919, AA650447, AL19391, AA378207, AL860535, T54173, AL609972, AL133083, AL300818, AL310992, AA847340, H86579, H93152, AA515939, AA670108, AL34566, AA503018, AA736488, AA683069, AA779667, AA831997, AA641112, AA229823, AA5450989, AA594719, AA837771, N27874, AA524616, H78984, AL417586, AL679390, AL679898, AL445774, AA228979, AL040717, AL196532, AL821938, R83068, AW341955, AA344768, AL040763, R34070, AL048479, AL284543, H79586, AA602906, AL042667, AL042670, AA302978, AL254770, AA633424, AL251944, AL300054, AL251034, AL251203, AL309059, AL251284, AL041240, T40629, AA376358, AW271071, F23338, R51582, AA613761, AL250552, R32162, AW090333, AL962030, R70883, AA358178, AA468975, AA053463, AL151503, AL015948, AL084173, AL962030, R70883, AA358178, AA468975, AA053463, AL151503, AL015948, F34506, AL119182, F24164, AA659425, AL337612, AV080118, R70884, T74524, AA483606, AW082104, AA622801, AL041375, AA347969, AA570740, T51874, AA568204, T93105, H04078, F34151, AA078384, AL249853, AL042373, AA583547, T60316, AA018923, AA012829, AW084967, C06210, AA568949, AW149241, AA503142, AL983447, AL354602, W45215, AA846978, F31634, H43183, R66537, AL925869, AL049563, AC005859, AC004982, AL050341, AL023803, AC005017, AC010582, AP000087, AC006544, AL035686, Z99716, AL1110802, AC007221, AC005747, AC004849, AC010206, AL022068, Z94056, AC002350, AC007114, AL031602, AC004801, AC005726, AC006312, AC004099, AC007563, Z97054, AL132712, AC004067, AC005920, AL133269, AL022720, AC008072, AF067844, AC004988, AC005538, Z82206, AC002302, AC008498, AL031681, AC003992, AL121923, AC003085, AC006004, AC005191, AL049540, AL049838, AC008008, AC007917, Z95152, AL022329,
HMMAQ15	3153	65966	1 - 600	15 - 614	
HMMAQ35	3154	707273	1 - 444	15 - 458	
HMMA35	3155	919558	1 - 275	15 - 289	

					<p>AL021368, AC005669, AL109984, AL022330, AL031671, AL133246, AL133396, AC005035, AC004032, US0871, AC004081, AL031289, AP000497, AL133243, U91321, Z81365, AL020997, Z95115, AC002366, AL096765, AL034549, Z93023, AL021938, AL009179, AC003001, AL049729, AC006116, AC006543, AC005094, AL034420, AF178030, AL133353, AC006557, AL022162, AC003042, AL024498, AL117354, AL132857, AL079333, AC004843, AC008119, AC005277, AC002367, I34294, AC005280, AC005821, AC007182, AC003046, AL035684, Z53847, AC007387, AC003689, AL031667, AC005082, Z98941, AC004134, Z86480, AC004787, U73023, AC000025, AC007687, AL049779, AC004757, AC005527, Z80232, AC006582, AC019014, AL035423, AC005962, AC004583, AC004894, AC007743, AL031177, AL031121, AC009275, Z84474, AC005231, AC007200, AL031291, U93337, AC009501, AC007358, AF13043, AC006023, AC004831, AL021781, AC005182, AP000090, AC002066, AP000355, AC003684, AC004842, Z97053, AL022320, AC005529, AC007938, AC004217, AC007510, AC003664, AC004500, AC007240, AL109956, AF196779, AL049766, AC003037, AC004485, AC006387, AL049869, AC005908, AC008150, D87675, AP000152, AC004765, AP000210, AP000132, AP000248, AL133445, AC004816, AC005544, Z97832, U52112, AC006305, AC005294, AC005532, AL136168, AC006035, AC007193, AC004821, AC004884, AL049569, Z68324, U85195, AF002223, AC006088, AC005703, Z78660, AE000658, AC007253, AC002316, AL121820, AC005696, AL049643, AC006137, AL035563, U82828, AF049895, Z74581, AC004042, AP000008, AP000704, AC004983, AL031584, AL031983, AC003104, AL021546, AC005187, AL096678, AL133355, AP000106, AP000038, AC006501, AL035413, AL121825, AC004797, AC003991, AC006042, AL049830, AC005214, AC005740, AC012384, AC006566, AC000035, and AC006115.</p> <p>AA721645, AA303054, AA806653, T94405, AA363078, R02532, T89133, AA729284, AA742815, AW069227, AC004975, AC003665, AF111167, AP000558, AC007382, AL031276, AC009263, AC009516, AC005233, AL022312, AC003070, AL031311, AC004000, L78810, AC004895, AC005017, AF001550, AL049832, AC002470, AL023803, AC005821, AL023577, AC007021, AC003041, AL109798, AC005200, AL021407, AL035086, AC004834, AF028308, Z85986, AL033375, AL035413, AC004257, AC005578, AC005773, AC004955, AC008044, AC004495, AC006445, AC005521, Y12851, AC005808, AL110122, AL239325, D86566, AL031846, AC007030, AC004019, and AC002991.</p> <p>AA889566, AA935287, AL049232, and Z93016.</p>
HMMAS88	3156	728019	1 - 609	15 - 623	
HMMAS91	3157	496192	1 - 455	15 - 469	
HMMAT17	3158	662705	1 - 448	15 - 462	
HMMAT26	3159	681416	1 - 474	15 - 488	

HMMAT78 HMMATU10	3160 3161	733239 964281	1 - 352 1 - 434	15 - 366 15 - 448	AC004019, AC006441, and AC005089.
					AW028950, F012222, AA878492, AA501867, AA773128, AT798041, AA342238, AA552724, AL249688, AA858712, AA580572, AL538236, AA219024, AA303054, AA533660, R09533, AL587467, AA429942, AA666215, AT791659, AT079491, T69879, AL136771, AA618035, AL209073, T71936, AA693484, AA767966, AD71762, AA262908, AA436140, AL038304, AT754567, AL569100, AV192599, AT755214, AA508809, AA481811, AL080607, AA583666, AA646248, AA772016, AA410771, N28624, T56025, AA533054, CL6638, AT45377, AA557790, AT734105, AA502991, AV339422, AA302978, AA832025, AA744401, AA617272, AT721560, H78195, AA219069, N67313, AA127222, AA471467, AA668387, AA487569, AA632765, AW007424, AA374240, AW242031, AA113126, AA584484, H56633, AL669392, AA229490, AL583448, AA228824, N70449, AA972523, AL860423, N63149, AA502568, AA385775, AA573000, AL819391, AA827383, AA157876, AA947265, AA074143, AA371410, AL252010, AL222880, AA902818, AA642823, AL249365, AA343523, AA714073, AW340905, AW023111, AA654482, AA126814, AA524800, AW07498, AA733881, AL929410, AA75188, AT753672, AA595554, AA503008, H60912, AL869786, N59744, AL762528, AT750950, W04644, AA598605, AA665181, AA046906, AA228979, AA229823, AL459879, AA773171, AA206707, H90878, AL019793, AL267450, AA659048, AA523703, T74259, AC005859, AF000194, AL133448, AP006696, AC005180, AL109798, AP000557, AC003692, AC004887, AL031587, AC000353, AC002375, AF129736, AL133163, AL034420, AC006064, AC005694, AC003108, AL008631, AL050321, AB016897, AC004084, AL022323, AC004492, AP000689, AL035086, AC005513, AC005412, AL109628, Z83826, AF205588, AC002310, AL032821, AC007671, AC005829, AC004466, AL022326, AC005231, AP000704, Z83840, AC007546, AC006014, AC007225, Z98946, AB020868, AC004019, AC006241, AL009179, AC006480, AC004491, AP000555, AC007688, AC005899, AC005399, AC004125, AL035249, AL049776, Z95114, AF064861, AL031287, AC005921, AP000510, AL035685, U95740, AC004531, AF003626, AL096263, AC005562, AC0009316, AC005015, AL003147, AC006948, AC005488, US2112, AL022316, AP000247, AC005088, AC005081, AC005841, U91323, AC007386, AL031666, AC002316, AL121658, AB023048, AD000092, AC004811, AC004216, AC003982, AL080243, AF053356, AC002301, AC0065049, AC005102, AL133312, AC002120, AC002365, AP000514, AC004522, AC005755, Z86090, AF030453, AC005220, AC006571, AC006449, AC008044, Z98050, AC005216, AP000466, AL035415, AF038458, AL135744, AC005837, AL251973, AC005071, AL034418, AC002563, AC005225, AC004797, AC004626, AP000692, AC007934, AC003086, AC006966, AC005519, AL024508, AC004228, AL109738, AL121754, AL022238, Z95152, AL031984, L78810, AC007687, AC005031, AC006006, AB003151, AC006023, AC007277, AL031123, AC004929, AC004551, AL096791, AL117356, AC006285, U80017, AL008716,

				AL023513, AC007263, AC004234, AC005902, AC007226, AL031277, Z98304, AC005291, AC006487, AC006115, Z95115, AC005189, AC006312, AP006688, AC008040, AC004596, AC005484, AC016025, AC005058, AL121652, AL049779, AL022162, AC004967, AL050325, AC005082, AF165926, AC004080, AC016027, AC005050, AL031290, AC006581, AC004816, AC004884, AC003874, AF134471, AC016830, AL034554, AC006946, AF111167, AC007055, AL049869, AC004985, AL049553, AC007488, Z97053, AB020864, AC000025, AC002059, AC008372, AC006130, AC004966, AC007358, AC004000, AC0066430, AL049569, AP000212, AP000134, U95739, AC003690, AL122023, AC005233, AC002425, AC005914, AP002558, AF111169, AP000246, Z97054, AP000167, AC004217, Z84469, AB036572, U91328, AC004820, AC005725, AL034548, AL133243, AL035660, AL022336, AP000962, AC005913, AL022318, AC007676, AL133246, AL049692, AL035454, AL020995, AC008115, AC006021, AC006406, AP000030, AL1331659, AC004878, and AC006379.
				AC003042.
				AC000118.
			15 - 403	
			15 - 430	
			15 - 267	
			15 - 396	
			15 - 444	
			15 - 515	AA614263, AW195898, AW080413, AL00810, AA525318, AA767276, AA345400, AL042316, AA426571, AL039672, F33785, R02571, AL032037, AL046094, AA554430, AA830936, AA528234, AA644545, F18098, H58588, U91321, AC005781, AC002310, AL022334, AC004834, AC004762, AC005265, AC008044, AF053356, Z83849, AF118808, AC007327, AC0050620, AC004143, AC004878, AC005034, AC004084, AC008009, AL024509, AC002287, AC006043, U52112, AC006275, AL031864, AL096791, AC005089, AL034420, AC007057, AC006449, AC005899, Z82178, AL033403, AC002390, AC006238, AC005666, AC003010, AL080243, AC006450, AC004787, AC002302, AT229041, Z99774, AC002420, AL034417, AL009174, AL049780, AC006530, AC002390, AC005874, and AF134471.
			15 - 418	
			15 - 363	
			15 - 352	
			15 - 365	
			15 - 404	AL049003, and AL049776.
			15 - 473	
			15 - 471	AC004963, and U95740.
			15 - 406	AA635985, AL78817, AA628245, T60029, T59956, and AC004985.
			15 - 513	H64058, H51075, AA424943, AA424944, AA873400, and H64008.

[illegible]

				AL924251, AL913017, AA368745, AA601270, AA658846, AW316969, AA557879, AL038990, AL569086, AA342958, AA533333, AW131249, AW029038, AA075734, AL287651, AL076610, AA847216, AA456976, AW193512, AA338522, AA938546, AA629419, AL801591, AL754955, AW408161, AL026785, AL733304, AL654588, AL031009, AL023582, AC006515, AL133245, AL080239, J511997, AC006285, AC006241, AL035387, AC006385, AC005993, AL031280, AC002398, AC004992, AC004028, AC016025, Z49816, AC003070, Z97634, AC006237, AC005754, Z92540, AC008072, AL022324, AC005939, AC003998, AC008124, AL082799, AP005556, AP000552, AC009516, AC004967, AC006374, M87919, AL020996, AL080238, AC004672, AC005193, AC005086, AC006060, AC006013, AF023840, AC003963, AC004151, AL021579, AC004848, AC006045, AP001035, M87918, AC005072, AL034402, AC006019, AC001234, AC004961, AC004614, AC005668, AL031721, AC005777, AL033521, AC005030, AL034554, AL133304, AC005225, AC007051, AC005209, AC007919, AC005879, U18396, Z80899, Z49236, Z95329, Y18000, AC005011, AC004882, AF060568, AL003147, AC005529, AL008734, AC000118, AP000557, AC007773, AC009399, AR060470, AB029343, U29953, AB023059, AL031709, AF025422, AC000021, AC004195, AF164343, AP000509, AL035659, AL033377, AC005094, AL033403, AC004890, X06123, AC004257, AL031777, AC007242, AC010072, AC007262, AE000660, X06053, X61109, X55925, AC006476, AF108083, AC004087, AL078474, AL031224, AC004583, AC005007, AC005486, AC007227, AC009721, AC003992, AC007298, AC007225, AL049830, L48477, L48476, AC002347, Z82901, AC004042, AC002564, Z83840, AC007429, AC006116, AC004098, AC007065, AC005538, AL021068, Z82204, Z68881, Z94865, L48038, AC004996, AC008122, AL022578, AL021878, AC000026, AC004841, AC007388, AC002059, AC006322, AC005412, AC004019, AB014079, AF027390, AC004993, AD000833, AC005602, AC000080, AC007536, AL049736, AC005350, AC002316, S70707, AL049562, AF038458, AP000080, AL078581, AC005663, AC002301, AL021155, AF188024, AC002072, AC003051, AL035417, AC005138, AC005969, AC006354, AC005940, AC005043, AC004049, AC004080, AC005815, AC006487, AC007537, AC005971, AC005944, D26067, AF154840, AC000403, AP000297, AF015725, AF129107, AF176915, AL031058, U92032, AC005303, AP000159, AP000018, AP000044, AP000112, AC005049, AP000345, Z75986, AL031668, AC001421, AP000346, AC004990, AL122003, AC007486, Z49235, AC006139, AC006958, Z98752, AC005923, AF045555, AF000514, Z95704, AC007324, AC008101, AC005410, AC004690, Z98946, AL024507, AC008079, AC016027, AC005081, AC004531, AC016830, U18399, AF19338, X80393, AC004797, AC005328, AC006128, AC004224, AC004156, AP000156, AC004217, AL031276, AC007690, AC005249, AC005495, AP000014, and AL022323.
				AW151657, AA782334, and AC005295.
HMMBR77	3187	835942	1 - 460	15 - 474
HMMBR91	3188	757047	1 - 465	15 - 479
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[illegible]

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HMM/BU78	3195	773426	1 - 696	W02201, H78487, and H78389.
HMM/BU77	3196	662684	1 - 463	AF192272, AL121235, A1954248, AAO13823, A1698342, AA654781, A1866487, AA730798, A1471887, W24462, A1470646, A1468899, AA679936, AL138455, A1312309, AA478355, A1732120, AW085780, AA680243, A1049508, AW089101, AW003867, A1088768, AA533333, AA279365, A1366993, AAO12964, T03217, A1950983, AA640410, AA640430, A1754336, AW023302, A1611895, A0888727, W275498, AA515644, AA746719, A1358384, A1041146, A138396, A431303, T61978, A1753929, A119649, A8833896, A8833875, A1791913, A1792133, A1821714, A1821044, AAO81462, A8876445, A1037574, A1099939, A1046519, A1816141, A1079637, A1040921, A228349, A1036413, A1022065, A1044441, A1042311, A1873852, AW380254, A1633479, A1732151, A1828710, A1774059, A1457397, AA526415, A1212207, A1046457, AA493136, A1754567, A1754105, A1755214, A4570602, AA315400, A1124610, AL134519, A1680562, A1886654, A1314972, N99489, T09124, A1609464, AA478866, AW022406, A1754253, AA588001, A3327868, AH99451, A1691091, A1524515, A1635217, AF034176, N49368, T60156, A1572924, A1901323, A1630176, A119306, AA503039, A1638452, RI17793, AA516058, A16168383, H72530, W20344, F05324, A1862939, AA493708, A18629429, C16438, AA916171, AA3358515, R94326, T73699, W52505, A1821785, A118991, AA537385, M77938, A1079389, A1042635, A1751216, A1446682, AW410354, AA478867, AA551552,

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HMMBV53	3197	727572	1 - 201	15 - 215	
HMMBV71	3198	490078	1 - 369	15 - 383	T73734.
HMMBX63	3199	729268	1 - 313	15 - 327	AA905066, AA767350, AL696646, H71659, Z98036, AL109758, AC005914, AF111168, AC002425, AC005072, and AC004551.
HMMCB291	3200	753799	1 - 411	15 - 425	AC005877.
HMMCA43	3201	715085	1 - 434	15 - 448	
HMMC867	3202	735293	1 - 755	15 - 769	R10827, AA165653, AA678092, AA165550, and Z95152.
HMMC009	3203	625368	1 - 468	15 - 482	W27527.

HMMCD21	3204	670651	1 - 182	15 - 196	AF067844, and AF143313.
HMMCE16	3205	577388	1 - 283	15 - 297	HT1992, AA508364, AA508371, and AI174714.
HMMCE26	3206	935148	1 - 522	15 - 536	AA565911, AW238341, AP04445, AI143663, AI192839, AA209436, AI709180, AI251944, AI046818, AW073950, FI6409, AW390601, T05617, RI1919, AI445557, AS437805, N54397, AI917904, AA337978, AI269639, AA299351, C06329, AA678616, H61871, AI080732, AI619994, AI054090, AA566084, AA502101, AA364315, AS582746, AW375645, H68343, AI926597, N23919, AI633386, AI240661, R89560, H53085, AW057719, AA372799, AI791291, AI791469, AI249365, AI567391, AI732514, AI527109, AI732243, AA658934, AA054053, AI298079, AA610255, AI284543, AA825784, AI138252, AI114131, AI042373, AI254770, AI783820, AI042667, AI042670, AA586433, W96277, AA081770, AA603432, AI571161, AI190484, AI251034, N64437, Z85987, AI236701, AC005520, AL031685, AC000085, AJ006995, AI034421, AC006241, AC002101, AC005256, AC007363, AC007263, AC003070, AC007114, AL078581, AL031657, AC004491, AC004985, AC007055, AC004526, AC004991, AC002470, AC005324, AC006023, AC004686, AC004687, AI080243, AF053356, AP006692, M26434, U07563, AC005730, AC002351, Z98752, AI022311, AP000359, AF134726, AL031651, AP000350, AC004834, AI034549, AC004383, AC003030, Z97353, AC004583, AC005914, AP006512, AC004859, AC006441, AL031681, AC004796, Z85986, AL035405, AC006251, AL031295, AC002996, AP002228, AL035658, AP000088, Z98050, AC005563, AC004531, AC004858, AC006312, AC005535, AC005920, AP000140, AC002369, AF109907, AC002350, AL021918, AF196989, AC005844, AF165926, AC005993, AC005089, AC002395, AC009516, AC005399, AC005696, AF217403, AC004131, AC005409, AI109827, AC005067, AI251973, AF001549, D43727, AL034418, AL030308, AC000379, AC005911, AP000126, AP000204, AC005212, AF001552, AL096712, AC004019, AC005049, AI022322, U52112, AC006273, AC002312, AL035086, AF196779, AF111163, AC002504, AC006121, AC000082, L78810, AL031229, AC005837, AC004150, AC006111, AC006277, AL031588, AC006501, U91323, AC003029, AC005071, AL049643, AL031803, AC002407, AL031848, AC007486, AC005037, AC007225, AL049766, AL049591, AP000244, AL031678, AL034420, AC004884, AI133445, AL021878, AL109758, AL049856, AL003147, AC006317, U85195, AL049653, AC005206, AC005003, AL079301, AC004423, Z99716, AC005231, AC002994, AL031597, AL049569, D84401, AP000704, AI000638, AL008734, AC005211, AI133163, AC010206, AC004884, AC005328, AF091512, AL031291, AC002426, AL031672, AC000025, M29929, Z68323, AC002511, AL031455, AC005924, AL031846, AI022326, AF067844, AF045553, AC006001, AC004953, AC005687, AC000070, AC005667, AC006064, AC005736, U95740, AL035413, AC007388, AC005081, AC006360, AC011625, AL023569, AI133269, AC009501, AL031123, AL133245, AC004814, AL096701, AC005899, AF207550, AC005529, AC006511, Z98950, Z95115, D87675, AC009405, AC001227, U82828, AP000510, Z95152, AC005005,

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HMCMCI03	3209	923771	1 - 385	15 - 399	II60700, AA463255, AA984765, R51650, N31773, R93782, AL265884, N56201, and AFI51819.
HMCMCI43	3210	864098	1 - 430	15 - 444	
HMCMCI67	3211	587819	1 - 479	15 - 493	
HMCMCI83	3212	855918	1 - 425	15 - 439	AC002302.
HMCMCI93	3213	708060	1 - 661	15 - 675	
HMCMCK81	3214	666792	1 - 346	15 - 360	AC007165.
HMCMCN36	3215	919484	1 - 463	15 - 477	
HMOAC95	3216	677110	1 - 206	15 - 220	
HMPAA21	3217	670114	1 - 546	15 - 560	N59555, AA362113, and AA362136.
HMPAA62	3218	754152	1 - 270	15 - 284	AA36224.
HMPAP52	3219	709621	1 - 264	15 - 278	

HMPBA34	3220	705509	1 - 450	15 - 464	AA362767, AA362266, AF017104, and AC016831.
HMPBB11	3221	855911	1 - 318	15 - 332	AA362334.
HMPBT49	3222	723299	1 - 324	15 - 338	
HMPTE27	3223	684607	1 - 394	15 - 408	
HMPTE84	3224	954383	1 - 491	15 - 505	AC002112.
HMPTE69	3225	932799	1 - 355	15 - 369	
HMQAB40	3226	712805	1 - 485	15 - 499	AI523941, AA055449, AA232904, AA233033, and AA055448.
HMQAG45	3227	723493	1 - 347	15 - 361	
HMQAL93	3228	684917	1 - 307	15 - 321	
HMQAO34	3229	706341	1 - 250	15 - 264	
HMQAP31	3230	825480	1 - 208	15 - 222	AW044231, and AC003681.
HMQAS25	3231	923515	1 - 469	15 - 483	
HMQAU20	3232	384780	1 - 359	15 - 373	T87899.
HMQAX65	3233	856318	1 - 295	15 - 309	AI021453.
HMQBD30	3234	714031	1 - 352	15 - 366	AA933089, AI680336, AW157317, AA523285, AW170427, AW170278, AA974441, AI027987, AI074894, AI102451, AI631081, AI591067, AI992135, AA643152, AI357176, AA577581, AA148225, AI031764, AW166779, AI857843, AI027266, AI568168, AA862399, AA205564, AI923284, AI951177, AI185759, AI924241, AW193281, AW79812, AI280897, AI928891, AI580036, AA824336, AA523194, AI208491, AW162293, AA417116, AA512937, AI166670, AI138933, AA410871, AA843221, AA497015, AI090410, AW327970, AI366939, AI891047, AI372093, AA417257, AW776942, AI083704, AA776511, AA580420, AA860537, AA716753, AI094406, AA827004, AI817572, AI027989, AI673583, AI276716, AI245211, AI986389, AI073857, AA595784, AI816482, AI751720, AI439302, AA976926, AA771950, AA088664, AI520873, AA131071, AA458901, AA878692, AI252636, AI039067, AA860792, AA395335, AA727780, AI538971, AA971121, AA995822, AI272334, AA480057, AI887538, N24774, AI282434, AA625734, AA968695, W31392, F33205, AA292590, CO3840, R53540, AA439351, AA428428, W15347, AW757714, AI192786, AI929797, AI085365, AI439295, AA971044, W95395, AA923667, AW162981, AW161746, AA383387, AA158971, AI073973, H92319, AA156280, AA890640, AA581636, AA158959, AA640130, N32793, H17478, AI130481, AA907137, AA130482, H29049, TS8022, AA886217, AW172803, AT761395, AA235711, E36843, AA488204, AA284912, AA426152, AA643884, AW250923, F17431, R49138, AA7130002, F33987, AW148600, AI004901, AI566499, AT751319, AI869823, AA662261, AA643919, AA505425, AA669508, AI537766, AA587451, AA477813, AI885826, T66930, AA374990, R17686, AA397788, N94618, AA296827, AA553934, AI158603, AA455096, AA235724, AA402833, F03779, AA635762, AA877354, F02931, AI886255, AI708303, AW068766, AI869668, AA421441, AA410723, AA402684, AA969529, AA852879, AI309009, AA402130,

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HMQBH12	3235	825460	1-250	15-264	A1800901, A1651852, A1654079, A1500417, and A1008730.
HMQBL13	3236	723212	1-397	15-411	
HMQBL17	3237	664904	1-266	15-280	
HMQBL54	3238	708075	1-292	15-306	AA809189, AC005280, A110150, J03818, and AC002115.
HMQBM27	3239	855902	1-265	15-279	A1373509, AW015352, AW131241, and A1500443.
HMQBM59	3240	708073	1-332	15-346	
HMQBN41	3241	683723	1-249	15-263	AC005994.
HMQBO17	3242	720569	1-306	15-320	
HMQBP18	3243	707279	1-356	15-370	AW369276, AF199364, and AC004893.
HMQBP26	3244	684887	1-297	15-311	W79802, and AA773227.
HMQBP54	3245	855900	1-321	15-335	
HMQBT65	3246	708065	1-294	15-308	
HMQBU96	3247	765162	1-404	15-418	A1887232, and T78614.
					AA453179, R71855, AA043907, F07759, AW248202, AA302385, AL047640, AA284122, H18360, H19959, H20698, H21242, AA434198, H46841, AA292979, AW247172, D52938, AA131344, AA203288, Z45125, H85906, AA017593, R81429, AW381812, AW392072, T19067, R55922, AA306741, AW381820, AW381788, T32133, R48687, W93644, D56251, AA308717, R59408, AA017424, R61099, H08032, R19873, AA321261, AA069353, AA410846, AA843927, W93904, AA984067, AA477522, AA523404, AA582827, A1885457, AA861765, and AC005067.
HMQBW05	3248	932509	1-146	15-160	
HMQBW76	3249	954587	1-204	15-218	AA381112, T29768, and AA381110.
HMQBX07	3250	954058	1-255	15-269	
HMQBX35	3251	707280	1-353	15-367	
HMQBX74	3252	932510	1-122	15-136	
HMQBY10	3253	968348	1-404	15-418	
HMQBT34	3254	706338	1-119	15-133	
HMQCC67	3255	740625	1-304	15-318	
HMQCK09	3256	384771	1-192	15-206	
HMQCO77	3257	839604	1-359	15-373	A1910103.
HMQCV51	3258	725828	1-346	15-360	
HMQDA84	3259	783174	1-243	15-257	
HMQDC34	3260	855890	1-335	15-349	N99626.



HMDC96	3261	765810	1 - 298	15 - 312	Z97989.
HMDD41	3262	575536	1 - 347	15 - 361	
HMDE85	3263	963366	1 - 333	15 - 347	
HMDDN16	3264	712388	1 - 343	15 - 357	AC005576, AF117947, and U77631.
HMDDN77	3265	772436	1 - 406	15 - 420	
HMDD984	3266	783176	1 - 419	15 - 433	AA630827.
HMDDZ19	3267	940694	1 - 155	15 - 169	
HMRA49	3268	868185	1 - 398	15 - 412	
HMRA74	3269	765975	1 - 560	15 - 574	
HMSAC03	3270	960949	1 - 401	15 - 415	
HMSAH89	3271	935429	1 - 470	15 - 484	

				AF165176, AC004638, AC005177, AL022345, AL022165, AC007386, AC006449, AP000018, AP000160, U73669, AC000092, AC005581, AC003109, Z97630, AL049610, AC005905, AL022397, AL034379, AC002039, AL023803, AC005041, AF029308, AC005003, AP0000339, AC003066, AP000217, AC006515, AC005225, AC004185, Z93848, AP000152, AP000011, AP000509, D87009, AL109839, AL031447, Z97056, AL121652, D84394, AC006271, AP0000962, AC005037, Z99943, AC002553, Z98884, AL022239, Z82184, AC005513, AL121825, AC004985, AL034402, AC004594, AC005361, Z68164, AC004257, AC000015, AL008725, AC003077, AP000502, AC006597, Z95113, AF007550, AL021707, AL121877, AF134726, L47234, AC005342, AC007773, AL031729, AC007695, AP001059, and AP001058.
HMSA108	3272	960482	1 - 372	15 - 386
HMSA144	3273	715726	1 - 363	15 - 377
HMSA046	3274	720686	1 - 408	15 - 422
HMSAP87	3275	383902	1 - 341	15 - 355
HMSAO64	3276	747120	1 - 374	15 - 388
HMSA062	3277	754156	1 - 373	15 - 387
HMSAX08	3278	960446	1 - 448	15 - 462
HMSAX13	3279	961032	1 - 352	15 - 366
HMSAX31	3280	698439	1 - 365	15 - 379
HMSAX32	3281	702992	1 - 345	15 - 359
HMSAX33	3282	727443	1 - 451	15 - 465
HMSAX85	3283	953708	1 - 317	15 - 331
HMSAZ07	3284	855878	1 - 186	15 - 200
HMSBB19	3285	707489	1 - 560	15 - 574
HMSBB44	3286	715738	1 - 339	15 - 353
HMSBF59	3287	722005	1 - 416	15 - 430
HMSBF84	3288	739001	1 - 235	15 - 249
HMSBH79	3289	683595	1 - 296	15 - 310
HMSBH72	3290	925288	1 - 331	15 - 345
HMSBM43	3291	510964	1 - 905	15 - 619
				AA577706, AT733856, AA315052, AA491941, AA904275, H67155, AA657835, AA664135, AI061313, AL079734, H79591, T74524, T46990, R76686, AA632744, AW271904, AL042667, AL042670, AW023111, AW069412, AW104161, AA071334, H60813, AI7380617, AW265688, AA525423, H07953, AA641651, AT791185, AI056177, AA410788, AT754170, AA555232, AI541154, AA833896, AA833875, N29105, AL560866, N66065, AA595770, AL569401, AA502149, AW265614, AL134330, AL031005, AC007376, AC006071, Z97054, AC005722, and AC005602.
				F24792, H77666, AA594145, AC005971, AC004491, AC003663, AC019014, AL133245, Z95703, and AC005602.
				AI910889, AI524744, AI347447, R72293, AA765015, AA736789, AA808343, AA865106, AW182983, R71382, R72338, and R70163.
				AB033020.
				AC004687.
				AL035073, and AC007446.

					AC007182, AC006312, L78833, AL050332, AL033397, U91323, AC005066, AC004217, AL031282, Z93930, AL031588, AC004812, AF117829, AC007349, AC004771, AC005839, Z85986, AL121603, AP000251, AC002565, AC008072, AC005914, AP000212, AP00134, AP000030, AL031447, AC004895, AF111168, AC007537, AC007308, AC004841, AC005527, AL096703, AC002550, AC004067, AL035249, AC006538, AL049611, AC007536, AC002302, AP000538, AL031228, AC004679, AL136295, AL109914, AL022165, AC007664, Z84466, AC004797, AL024507, AP000689, AC007052, AC008018, AC005081, AP000043, AP000111, AC004655, AC007421, AL022329, Z84487, Z84469, U95742, AL031281, AC005529, AC002425, AF109907, AC004526, AC005482, AL031657, AL022721, AP000694, AC005412, AC005972, Z82244, AC007216, AC008154, AC006501, AL121658, Z98304, AB023030, AC006121, AC004491, AC006091, AC005989, AP000152, AC002477, AC002400, AP000140, AC005338, AC006006, AP000511, AC005670, U91318, Z73358, AC007637, AC007055, AL008582, AL035086, Z93023, AC016027, AC005082, AL080243, AC004253, AC0016830, AC002472, AF031078, AP000011, AC004874, AP000088, AF030876, AC005901, AC009516, AF129756, AL109984, AC004821, AL133244, AP000353, AF196779, Z85996, AL050341, AC004887, AC006531, AC004805, U95740, AC003983, AP000116, AC000025, AC004854, AL080317, AC000521, AL133243, AC007546, AL023575, AL022327, AC004019, AL031311, AC005088, AL139054, AC008009, AC006277, AL049779, Z82176, AL049694, AF196909, AC000900, AL031284, AL031666, AC007684, AC007298, AC005037, AC003108, AC005921, AP000114, Z92546, AL034421, AC005288, Z83846, AC005841, AC006649, AF091512, AL021918, AL133246, AC006509, AC004656, AL008715, AC007371, AL021920, AP000512, AC009405, AP000514, AF024534, AC016025, AL049832, AC005740, AL031733, AC000571, AL121595, AC006946, Z95152, AC006014, AC007057, AP001053, AC002070, Z98751, AC005971, AL031055, AP000240, AC005209, AL031120, AC006011, AC005488, AL121769, AP000008, U47924, AC005880, AF064861, Z83844, U96409, AP000552, AL035458, AL031683, AC004590, AL110502, AL031681, AC004955, AC004816, AC002347, AC009248, AC004622, AC005306, AC006236, AL003147, AC007938, AC007384, AC004148, Z98884, AC006120, AC007406, and AC005913.
HMSBM481	3292	383978	1 - 339	15 - 353	
HMSBN71	3293	766408	1 - 227	15 - 241	
HMSBO55	3294	715684	1 - 135	15 - 149	AL579937, N47104, AA805339, AA768366, AL078743, AC005774, and Z93019.
HMSBP46	3295	719425	1 - 127	15 - 141	
HMSBP80	3296	855871	1 - 373	15 - 387	
HMSBO93	3297	745862	1 - 406	15 - 420	
HMSBS51	3298	708662	1 - 348	15 - 362	
HMSBS63	3299	926833	1 - 440	15 - 454	
HMSBS86	3300	785804	1 - 533	15 - 547	AL121998, D83253, Z70689, and Z97054.

HMSBU22	3301	677327	1 - 230	15 - 244	
HMSBU68	3302	709231	1 - 295	15 - 309	AW117257.
HMSBV28	3303	970579	1 - 429	15 - 443	
HMSBX38	3304	761392	1 - 467	15 - 481	R94422.
HMSBX59	3305	558203	1 - 291	15 - 305	AI621141, AA640155, AA569180, AA376315, AI922061, AA664366, AI052560, AA501775, AA230232, AA055576, AA258511, AA487808, AI940701, AI820994, AA593381, AI082078, AW238615, TG3028, AA641592, AA601152, AI720812, D59168, T62761, AI132952, T85549, T47477, H17541, N21510, AA353087, R09080, AB002068, AA780549, AA584059, AA225638, N32456, H47544, TG2126, H13261, AI117339, AF205588, AI022345, U82828, AI049710, AC005386, AC005018, AF049895, AP000146, AI022576, AC007488, AI121877, AC008929, AC007380, AC004075, AI023581, AC002412, Z82212, AC005297, AC004677, AC005341, AI096827, Z99571, AC004855, AC007567, AC004158, AI022310, Z93019, AC002429, AF172277, AI110505, Z82211, AF003529, AC016046, AC007514, Z83745, AC006481, AI136297, AI022394, U82696, AI117351, AC005076, AI030996, AC000114, AI049844, AI050339, Z92844, AI008772, AC006462, AI049589, AC004470, AC003106, AI080248, U69730, AC002070, AC008378, Z71187, AI022154, AC008169, AC004842, Z98255, AC006946, AC006548, AC009802, AI049743, AC006313, AI050309, AP000083, AC004029, AP000692, AC005378, AC002564, Z74477, AC002463, AC004908, AC002449, AI049778, AC004083, AC004049, AI022101, AI121782, AI021654, AC002454, AI133247, AF070718, AI009047, AC006152, AC011198, AC006070, AC007317, AP000476, AC004047, U66059, AC007243, AC007065, AI109628, AC004161, AI079334, AC000056, AC004451, AC005064, AC004823, Z77249, U77789, AI090928, AC003099, AC003658, AI034370, AC006979, L11910, AI004641, AI031665, AI035252, Z95124, AI080239, AC005201, AI031286, AI031652, AI021157, Z82205, AC000119, AI133500, AI049838, AC006043, AI031671, AI078588, AI022157, Z82205, AC002524, AC007286, AC005273, AC007032, AC007533, AC007966, AI049834, AC006203, AC006356, U96409, AP000460, AC009308, AC016831, AC005352, AI049696, AC007159, AC006427, AC006840, Z70274, Z71182, Z82210, AC005588, AI023875, AI049734, AC007239, AI035563, AI121823, AC005873, AC006249, AC005034, AC002994, Z82215, AI022150, AI031114, Z69649, AF109076, AC004613, AC004894, AC005516, AC003037, AC006040, AI049874, AC005019, AC006952, AI035698, AI739329, AC006455, AC004067, AP000457, AC005050, AC005019, AC006952, AI035698, AI739329, AC005498, AC002040, AI136520, AC003973, AC004384, AC005593, AC003676, AC002488, AP000547, AI035258, AI035688, AI121871, AC004615, AI034410, AC005739, AI050334, AC005900, AC004617, AI022401, AI096803, AB014078, AC006139, AC007007, AC004959, AC000055, AP000514, AI049634, AI031663, AI033521, AI049557, and AI109941.
HMSBV69	3306	866097	1 - 757	15 - 771	AA699358, B94584, and AF093097.
HMSCA33	3307	702821	1 - 413	15 - 427	H16746, AI989391, AI651717, AI080151, AA573388, AA927298, AA830295, AA805889,

[illegible]

HMSCD26	3317	530239	1 - 651	15 - 665	AP000334, and AP000173.
HMSCD06	3318	960601	1 - 376	15 - 390	AI610751, AI096706, AC005256, AC005214, AC005145, AI133448, AC005354, AP000553, AC007435, AC005321, AI096774, AC002477, AC005682, AC002314, AI049843, AC002367, Z95152, and AI034369.
HMSCK17	3319	711703	1 - 484	15 - 498	Z82195, AF067787, AF067788, AC004257, and AC006511.
HMSCK38	3320	967576	1 - 680	15 - 664	
HMSCLO1	3321	921754	1 - 352	15 - 366	
HMSCM10	3322	926836	1 - 802	15 - 816	AA527731, AI821508, AA532420, and NS2655.
HMSCM95	3323	884019	1 - 295	15 - 309	AC004765.
HMSCO18	3324	917009	1 - 439	15 - 453	AI121748.
HMSCO39	3325	709592	1 - 284	15 - 298	AP004096.
HMSCO60	3326	739685	1 - 384	15 - 398	T93243, and AI033518.
HMSCO70	3327	879436	1 - 356	15 - 370	AA018611, AA634223, T99365, AA613954, AI537407, Z98051, AI022320, AI022476, AC006241, AP000556, AC005089, AC000039, AI049694, AC007421, AC004887, AP000045, AC005015, AC004099, AP000557, AP000501, AF004861, AC005081, AC002310, AF047825, AC004841, AC007686, AC007124, AC005971, AC005412, AP000113, AC004854, AI031657, AC005082, AC005527, U91321, AI035422, AC004815, AI050324, AC007868, AI133353, AF134726, AC004263, AC007541, AI022322, AC003982, AC007707, AC005837, AF196969, AI109984, AI121603, AF088219, AF053356, AC005220, AC005702, Z83844, AF038458, AI009247, AC005529, AC005520, U78027, AC006505, AF030876, AE000658, AF031075, AC006130, AC003030, AC005914, AP000300, AI033525, AC003108, AI229041, AI031846, AC004797, AC005666, AC005207, AP000502, AC006112, AI031273, and AC005409.
HMSCR39	3328	601504	1 - 593	15 - 607	AI138265, AI040921, AI038705, AI877227, AI169478, AW406447, AI045205, AI042853, AA515829, AI801482, AW327868, AI281881, AI334443, AW029038, AW270270, AI024251, AI045053, AA610491, AI33164, AI045526, AI963720, AA210852, AI679782, AI046409, AA469451, AW162049, AW406755, F36273, AI929531, AI120687, AI811687, AI345675, AI358229, AI284640, AI683577, AW276817, AW193265, AW088202, AI044858, AW021583, AI431303, AI904894, C06327, AI962020, AI148277, AW088224, AA526787, AI049722, AA581903, AI339850, AI038785, AI708009, AI350211, C05755, AI608771, AI365988, AA649642, AW088058, AI613280, AW162489, AA587604, AI471534, AA178953, AI345681, AA192740, AI471543, AA468131, AI053672, AW438643, AW338086, AI287651, F79989, AI192631, AI341664, AI053790, AA134367, AI281903, AI254615, AI780967, AI918421, AI061334, AA661948, AI917271, AA613227, AI577906, AI110961, AI619997, AI918421, AI471481, AA521323, AI055547, AA601355, AI457397, AW238583, AI688846, AW440836, AA528810, AI270117, AA826303, AI343654, AA652057, C79026, AI745523, AI744995, AW072587, AI038474, AI198376, AW439558, AA501784, AI754658, AI335871, AI053606, AI298710, AA533725, AI589230, AA631507, AI279165, AI005388, AW265009, AI623720,

				AW193432, AA127916, AB375710, AA679124, AL042420, AA483771, AB21714, AT92133, AF191913, F32808, AA521399, AA720702, AW339687, AI085719, AW062724, AA594145, AI160117, AI177061, AA523815, AC005694, AC008372, AC006234, AC005527, AC006120, AC005932, AC005274, AC006141, AL020995, AC004477, AC007221, Z83826, AC005280, Z95704, AC007664, AC007666, AL031311, AC006285, AC005288, AC001267, AC005722, AC002470, AL096701, AC006488, AL7924, AL031662, AL121603, AP000356, AL050306, AL078593, AC005409, AC000052, AC004531, D84394, AL121754, U81595, Z94721, AL034549, AC005821, AC006511, AL136295, AC006312, AC006077, AC007686, AE000658, U15177, AL049795, AL109628, AL035079, AC006960, AC004854, Z83840, AC005914, AC005566, AL049776, AP000359, Z93930, AC004832, AC007341, AC004796, AC005212, AC009247, AC004878, AC004797, AP000961, AL008629, AC005089, U91322, AC007226, AJ246003, AL050312, AC002350, AL021394, AC004848, AP000302, AL022237, AC005915, AL049569, AL008582, AL033525, AL021877, AL109801, AL022311, AC005772, AF030876, AJ006998, AC006064, AC005829, AL122020, AL133448, AC004841, AP000513, AL031848, AC006116, Z98036, AF111168, AC005874, AF134471, AC004821, AD000092, AC002430, AC007546, AC005695, AL133246, AL139054, AL121653, AF020803, AL023284, AL035420, AF088219, AC006101, AC004263, AL034429, AL109627, U95742, AF031078, AC006450, AC005913, AC007917, AL049780, AC007384, AC007536, AC005081, AC004999, AC005696, AC002400, AL031284, AC009516, AL022721, AC003604, AC005553, AL049745, AC004887, AP000504, Z990531, AC005180, AP000114, AP000046, AL034423, AL022163, AF129756, AC006111, AL109738, AL049743, AC007064, AC007035, AC007193, AP000535, AC005520, AP000552, AC005666, AL021707, AC005703, AC006449, Z97632, AC005037, AC006026, AC007919, AL021939, AL096791, AC004605, AC005519, AP000558, AC004526, AC006480, AL022323, AC003689, AC004019, AC004972, AB001523, AC005839, AC005902, AP000952, AP000045, AF165926, AC005231, AC000025, AC005899, AC006012, AC004139, AF001549, Z97054, AC020663, AF053356, AC002347, AC004771, AL050331, Z98200, AC007051, AL034417, AL008718, Z93241, AC005516, AC007388, AF196779, AC006441, AL021453, AC002395, AC005331, AC007845, AC005291, AP001172, AC005256, AP000553, AL110502, AC005295, AC005663, AC007688, AC003690, AC006130, AC007052, AL003147, AL022326, AC007559, Z98950, AC005632, AL133245, AL031283, Z75741, AC004814, AC005372, AC016026, AL031005, AC003043, U660599, AC005562, AC007216, AL031295, AC007731, Z85986, AC003029, AL031286, AP000115, AL121934, AC005701, AC006251, AC007242, AC005971, AC005500, AC005257, Z74739, AL031577, AC005084, AC005901, AC004970, U95090, AL049636, and AC005065.
HMSCB82	3329	806176	1 - 251	15 - 265
HMSCU35	3330	725513	1 - 676	15 - 690
HMSCV29	3331	703105	1 - 345	15 - 359

HMSCY91	3332	789306	1 - 420	15 - 434	
HMSCZ51	3333	724839	1 - 187	15 - 201	AI052366.
HMSDA03	3334	881563	1 - 508	15 - 522	
HMSDB74	3335	765933	1 - 327	15 - 341	
HMSDD80	3336	503967	1 - 910	15 - 924	N39672, R92235, AI248707, AA682815, AI119721, T91429, T91341, M85784, AA505009, AL045445, W90432, N30473, D79995, AC004495, and AC007151.
HMSDF01	3337	921672	1 - 303	15 - 317	
HMSDG77	3338	708078	1 - 340	15 - 354	AC004841, and AI031255.
HMSDK32	3339	416928	1 - 252	15 - 266	Z93784.
HMSDM29	3340	703075	1 - 176	15 - 190	H59931, H67432, AC005154, AC009784, AC003100, AC003034, AL022154, Z70280, AC003072, and AC006998.
HMSDP23	3341	583670	1 - 485	15 - 499	T41354, AC006123, and AC003107.
HMSDQ33	3342	702772	1 - 368	15 - 382	
HMSDR06	3343	954682	1 - 272	15 - 286	AL020995.
HMSDR35	3344	732443	1 - 335	15 - 349	
HMSDU43	3345	868183	1 - 303	15 - 317	AI243681, AA620742, AA906977, AA610037, and T04923.
HMSDU73	3346	753010	1 - 136	15 - 150	AF053755, and AF047033.
HMSDV49	3347	722194	1 - 343	15 - 357	
HMSDG37	3348	708656	1 - 202	15 - 216	Z41951, and AW295173.
HMSFX59	3349	708076	1 - 63	15 - 77	
HMSFX80	3350	718087	1 - 305	15 - 319	
HMSF023	3351	676369	1 - 394	15 - 408	
HMSF001	3352	921628	1 - 365	15 - 379	
HMSFH05	3353	932219	1 - 414	15 - 428	
HMSFH21	3354	671133	1 - 333	15 - 347	AL078463.
HMSFH24	3355	855826	1 - 259	15 - 273	
HMSFH27	3356	682204	1 - 339	15 - 353	
HMSFH29	3357	689857	1 - 229	15 - 243	
HMSFH31	3358	583757	1 - 866	15 - 880	AA180174, AA283603, AA304829, AA233827, and AF115509.
					AI174683, AI174796, N58549, AI523111, AA585278, AA585439, AA585430, AA585389, AA585378, AI526112, AA585325, AA585329, AA283312, AA585453, AA585116, AI525306, AA585327, T26367, T48593, AW366296, AA585351, AI557238, AI52656, AI122127, Z49918, AI109759, AC005084, AC006975, AI035467, AP000432, AF118808, AC002368, AL049545, AI132994, AC004756, Z98200, AI136363, AI132708, and AI132333.
HMSFH34	3359	706349	1 - 319	15 - 333	
HMSFH39	3360	705586	1 - 344	15 - 358	
HMSFH59	3361	739415	1 - 355	15 - 369	AA131265.



HMSFH73	3362	764554	1 - 187	15 - 201	
HMSFH79	3363	775318	1 - 206	15 - 220	
HMSFH83	3364	780301	1 - 520	15 - 534	
HMSFK32	3365	671136	1 - 227	15 - 241	
HMSFL10	3366	968061	1 - 331	15 - 345	AC008062.
HMSFL41	3367	934139	1 - 485	15 - 499	Z45769, and AC004752.
HMSFL49	3368	683406	1 - 287	15 - 301	
HMSFN48	3369	697991	1 - 473	15 - 487	
HMSFQ48	3370	721795	1 - 596	15 - 610	AW083053, A1457313, A1634187, AW069227, AA365893, AA303054, A1744830, A1753365, H68343, A1301475, A1926233, A1275183, R89081, AA747234, AA018231, AA904211, AC006449, AE000658, AC004854, Z83840, AC007227, AC005874, AF134471, AC005046, AC007666, AC005837, AL022312, AL022328, AC005089, AC005071, AC005377, AB023049, AC006011, AL049779, AC004232, AL024498, AC004593, AC004216, Z84469, U96629, AC006057, Z83822, AC005962, AC004659, AR036572, U91328, AL050307, AC006965, AC004876, AC007388, AL022476, AL121653, AL031594, AC007226, L076477, AL031311, AC005365, AL031589, AC005777, AC004893, AC003108, Z82215, AL023799, AC006285, AL031056, AC007337, AL034420, AC005921, AC005696, AC002400, AC004821, AL024507, AC005231, AP000692, AC005015, AC003982, AL117354, AL034402, Z74739, AC004000, Z93023, AC003957, AC006328, AC005971, AL033458, AC011311, AC002302, AC005102, AL033527, AC010197, AL049830, AC007637, AL031295, AC005529, AC004858, AC006160, AP000252, AC002527, Z83986, AL031985, AC006039, AC005081, AL096701, AC004099, AC005746, AC008044, AC005726, AC002126, Z95116, AL031427, Z83838, AL049759, AC002542, AC004019, Z85987, AL030318, AC002115, AP000501, AP000359, AP000212, AP001134, AC005037, AC002369, AL009181, Z99943, AL035405, AC000052, AC005583, AB023048, AC000039, Z98051, AC003010, L78833, AC004832, AL034376, AF001552, AC005399, AL009172, AL109952, U85195, AC005722, AL033587, AF111167, AC004491, AC004799, AC005740, AC005412, AC004148, Z84466, AL034429, AL049569, AC005914, AL096774, AL022313, AC007216, AL109798, AC006515, AL078638, Z97630, AC005933, AC005048, AC002549, AC006088, AF038458, AL031662, AL049776, AP001053, AP000088, AF024533, Z83826, AC005215, Z98752, Z83845, AF030453, Z82202, AC004033, AC000105, AL022336, AL031670, AP000553, AC005568, AC005520, Z92542, AC002997, AC000475, AC006480, Z93783, AC007011, AL023575, AL035410, AC004852, AL121769, AP000113, AC004531, AL080243, AC016831, AC006946, L78810, AL031595, AC005067, AL109758, AC005225, AF064861, and AC004106.
HMSFQ69	3371	657538	1 - 445	15 - 459	AW025161.
HMSFR29	3372	693440	1 - 151	15 - 165	AA552587, AC006296, and AC005841.
HMSFR69	3373	738588	1 - 255	15 - 269	AW081383, A1799195, A1680498, A1345677, A1358213, A1866770, A1357599, A1249946,

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HMSFR71	3374	760517	1 - 199	15 - 213	AL035427.
HMSFR92	3375	861344	1 - 567	15 - 581	AC006157.
HMSFR59	3376	759420	1 - 422	15 - 436	T47867, R76479, T49436, R06560, AA715949, AB927261, A1453160, AL1564294, AA668475, AA632765, AW081324, AL471467, AW007424, A1819391, A1823533, A1823535, H40478, AA226770, AA515551, R99418, A748102, A1556264, AW028834, A4017174, A4019068, A1891075, AW058223, W04439, A4064440, A4854460, W56799, A1289916, A4467774, R67093, A4702717, AL0719523, I45580, A1801395, A4149029, A4469441, R35259, AL041895, AL040717, AL049274, AC004466, AC005200, Z82215, AC005880, AL109984, M15366, AL020996, AC004520, AC004967, Z97635, M30688, AL022337, AL022156, AC005190, X54486, AC000402, AC004653, AC002102, AC005353, AC004190, AC008116, AC000003, AC006965, AC005552, AC006305, AC006333, AC002366, AC006979, AC016027, AC016830, AC005256, AC004955, AC002059, AC004491, M13792, AC005483, AC002378, AL031114, AL031281, AC005225, Z84485, AC002472, AL049779, AC007226, AC006141, AC002554, Z68884, Z39754, Z70281, AC004652, AC004678, AC003048, AC005360, AC005796, AC000091,

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HMSFT23	3378	855812	1 - 399	15 - 413
HMSFT52	3379	727302	1 - 489	15 - 503
HMSFT73	3380	761647	1 - 323	15 - 337
HMSFW13	3381	917020	1 - 309	15 - 323
HMSFX01	3382	917021	1 - 496	15 - 510
HMSFX08	3383	959784	1 - 290	15 - 304
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HMSFY70	3385	757338	1 - 336	15 - 350	
HMSFY204	3386	615473	1 - 201	15 - 215	
HMSGA34	3387	706355	1 - 209	15 - 223	

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HMSGA41	3388	712490	1 - 530	15 - 544
HMSGB07	3389	953715	1 - 332	15 - 346
HMSGC69	3390	757337	1 - 340	15 - 354
HMSGC76	3391	767661	1 - 345	15 - 359
HMSGD02	3392	920525	1 - 430	15 - 444
HMSGD15	3393	959468	1 - 409	15 - 423
AL889995, AA469230, AL587583, AL587565, AL609992, H62123, AL791659, AL609984, AW410409, AW027796, AA857296, AA468923, AL610012, AL866911, AA935827, AL609974, AL003086, AL821605, AL345566, AA480486, AL041375, AL245483, AL590404, AA135761, AW238341, AL733523, AL453155, AL547110, AW020150, AL521525, AL065031, AA507814, AA676592, AA831714, AW341903, AA425283, AL857834, AL560866, Z99348, AA216684, AA182928, AA720582, AL254267, AA557945, AA804726, AL123488, Y94115, AW169038, AL890297, AW338376, AW404543, AL171400, F23338, AA226356, AL095197, AA595661, AL134278, AA679946, AW020094, AW302320, AL042667, AL042670, AA584489, AW149241, AL040051, AL084320, AW008217, AL926102, AL120282, AW021399, AL567676, AA601376, AL679730, AL044339, AL044701, AL800426, AA526542, AA584241, AA526099, AL369076, AL197089, AL282488, AL572680, AA493546, AA354289, AA324559, AW157128, AA324108, AA676462, AL754653, AA551519, AL053518, AW072963, AL826857, AA807704, AL279417, AA618531, Z95114, AL023575, AC004812, AL049569, AC004678, Z82215, AL035422, Z95115, U78027, AL034549, AL035249, AC007207, AC007685, AL021808, AL031291, AC005154, AF047825, AC002326, AL121603, AC005484, Z84469, AC005255, AL109627, AC006449, AL009031, AL022318, U91323, AC008372, AC008044, AC005399, AC005081, AP000692, AL031311, AC004972, AL022721, AC005841, AC005013, AP000065, AC003108, AP000048,				

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HMSGH49	3394	712123	1 - 530	15 - 544
HMSGH42	3395	712994	1 - 340	15 - 354
HMSGR16	3396	861329	1 - 793	15 - 807
HMSGR82	3397	778875	1 - 279	15 - 293
HMSGL27	3398	638097	1 - 1599	15 - 1613
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HMSGP45	3399	699243	1 - 428	15 - 442	

HMSGP49	3400	723131	1 - 376	15 - 390	
HMSGP73	3401	925385	1 - 961	15 - 975	AI740741, AI435434, AI475908, AA026659, AI802875, AA262760, AI524192, AA279545, AA262840, W45255, AI138162, and AC004490.
HMSGQ30	3402	692880	1 - 393	15 - 407	AI468586.
HMSGQ57	3403	733869	1 - 406	15 - 420	AI700885, AI884861, AI473995, AI073373, AI033464, AA357979, AA078184, T39390, AI903448, AA578626, AA524007, AI207476, AA584208, AA313133, AI143653, CI4576, AI869786, AI289396, AI921491, AI131705, AA513189, CI5356, AA078137, AA525571, AI731366, AIW081857, N34258, AI437653, R48980, AA584484, AI570380, AA247731, AI304790, AA961966, AIW238639, CI5180, AA628740, AI049630, AA373861, AA322542, AA078509, AA295893, AA533660, AA295899, AA633799, AI036665, AA633981, AA565232, AA633875, AA666066, F03907, AA601653, AA736713, AA513916, AW32755, AA492524, AI889426, AA493628, AI045423, CI5362, AA402113, T49133, AI468993, AA229030, Z36248, T39420, AA084950, AA468923, AI036070, AA438993, AI866971, AI134664, H92336, T06876, AA714190, AA314338, AI431513, AA133013, W52705, AI733856, AA985145, W59977, AA744095, H92613, AA713735, F55684, AI863246, T08386, AA363503, AI338575, F10822, AA308598, F30497, AI624038, AA569206, T07225, AA757758, AI065043, AA302557, AI1223968, I49286, AI654638, W44359, T04928, H74324, AI679221, AI281401, AI478906, T30418, AW105463, AA683091, AA350406, AW337805, AI859906, H69517, AA728911, AI612810, AC008125, AC004887, D87012, AC011331, AC005551, AI035659, AC002091, AC005015, AI031651, AC003962, AC002326, AI023575, AC006963, AC002364, AC004687, Z98036, AC004703, AC005865, AC004859, AI049569, AC004131, AC005280, Z99716, AF048727, AI133289, AC004383, AC007308, AI049548, AC004891, AC006043, AI021393, AC005081, AI133448, AC004832, AC006000, AC012099, AI035249, AP00303, AI035072, AP000049, AP000116, AP000114, AP000046, AP000311, AI009031, AC003682, U62317, AC007011, AC007421, AI031663, AC005005, AC007993, AC006160, AC004778, AI031664, AC004844, AC005089, AC002565, Z81363, AC002303, AC005231, AI117694, AC005086, D86995, AC003098, AC004100, AI030348, AC002039, AC007237, AI035667, AP000555, AC005726, AC007546, AC004216, U62293, U63721, AC005057, AC003973, AC005874, AF134471, AI132826, AI008634, Z82244, AI049869, AC006312, AC006275, AC004675, AI049576, AC006578, AC003681, AC007899, AI133312, AC006336, AC007292, AI011931, AI020993, AI031781, AI050307, AI031290, AI035417, AI243213, AC005043, AC008015, AI133238, AF107885, AF205588, AC004150, AF088219, Z93241, AC007367, AC005942, Z49235, AC003007, AI109914, AC005632, AF000662, AC005952, AI049745, AC007193, AP000350, AC004983, AF024533, AC006146, AC010200, AB011226, AC003119, AC000379, AC004836, AC006251, AI031056, AC002312, AI049776, AC004882, AC004975, M94081,

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HMSGSGT45	3405	722069	1 - 363	15 - 377	R00440, H65822, AL032598, and AL653884.
HMSGU52	3406	727300	1 - 313	15 - 327	AC004634.
HMSGU76	3407	677512	1 - 283	15 - 297	
HMSGU89	3408	963497	1 - 467	15 - 481	AT191905, W31955, AT139525, AA459612, AA486469, AA410963, AW291807, and AW137789.
HMSGV47	3409	920116	1 - 409	15 - 423	AA568624, and AC002477.
HMSGW16	3410	767621	1 - 343	15 - 357	
HMSGX02	3411	920511	1 - 347	15 - 361	AC005946.
HMSGX12	3412	792437	1 - 268	15 - 282	
HMSGX14	3413	871492	1 - 452	15 - 466	AW386461, AW386289, AW386672, AW386599, AW386619, and T52919.
HMSGX43	3414	715452	1 - 290	15 - 304	
HMSHA04	3415	757509	1 - 236	15 - 250	
HMSHIA37	3416	708660	1 - 347	15 - 361	
HMSHB10	3417	964651	1 - 364	15 - 378	
HMSHB14	3418	657543	1 - 351	15 - 365	
HMSHC94	3419	960196	1 - 379	15 - 393	AC006566.
HMSHD50	3420	724397	1 - 387	15 - 401	
HMSHE51	3421	725692	1 - 364	15 - 378	
HMSHE55	3422	923378	1 - 433	15 - 447	
HMSHG24	3423	676545	1 - 348	15 - 362	
HMSHL54	3424	920119	1 - 392	15 - 406	AL042448, and AF0001549.
HMSHH94	3425	967167	1 - 579	15 - 593	AA521310, W22173, and AF093097.
HMSHK14	3426	920106	1 - 362	15 - 376	
HMSHL09	3427	789229	1 - 231	15 - 245	AA5044108.
HMSHL18	3428	690655	1 - 340	15 - 354	AA934649, AL0243516, AA936359, AA749565, AA748744, AL687298, AL219611, and AL110200.

HMSHL85	3429	773811	1 - 348	15 - 362	AL117354.
HMSHL28	3430	855792	1 - 523	15 - 537	AA476784.
HMSHO64	3431	746582	1 - 398	15 - 412	
HMSHP08	3432	868170	1 - 364	15 - 378	
HMSHQ07	3433	953389	1 - 569	15 - 583	
HMSHR29	3434	924813	1 - 811	15 - 825	
HMSHR64	3435	746587	1 - 406	15 - 420	R25085, AA281484, AA09305, AA351609, W96314, and AL137561.
HMSHT10	3436	964647	1 - 376	15 - 390	<p>AL158229, AA587604, AA908687, AW079135, AW406755, AL457397, AL165988, AA613203, AL119691, AL134443, AW069481, AW419262, AT745325, AL1821881, AL035367, AA652764, AL054525, AA482768, AL124759, AW338086, AL270559, AA669840, AA446657, AA610491, C05986, AL284640, AT754253, AW193265, F36273, AL1133164, AA581903, AL046457, AW088058, AA551552, AL046205, AA346458, AL131232, AT1799642, AL105547, AL1821714, AT192133, AL1791913, AL038705, AW270270, AL280632, AA503600, AW029038, AA493708, AW079792, AW439558, W79504, AW301809, AA828749, AL431240, AW407578, AA738034, AL120687, AL249997, AA720702, AA580808, AA502866, AL564185, AA613227, AW773218, AA973803, AA1113861, AL866908, AL821755, AA309257, AW167372, AL119984, AA164251, H96730, AL245679, AA665021, AL684097, AW089322, AA747777, AW166815, AL17481, AA767971, AW406162, AA569471, AL921296, AL434695, F25135, AA244286, AL299694, AA643962, AA722372, AA521323, F28204, AA713815, AL148277, AL951863, H77643, AA533725, AW021207, AL370878, AW149339, AL022328, AL096701, AC004033, AC005480, AC007731, AC005500, AC004637, Z98051, AC003007, AC006251, AL049569, AC005261, AC005632, AL021808, AC007666, AL049759, L47234, AC005900, AC006275, AC000119, AC004686, AC000032, AC005837, AL049776, Z86061, AC004967, AL020993, AP000114, AP000046, AL049643, AC007510, AC005527, AC004827, AC007207, AL049709, AC004987, AC006205, U85195, U80017, AC005089, AC007685, AE000658, AC007726, AC004638, AC006511, Z82097, AC002091, AC006017, AC006271, AC005231, AC004982, AC004491, AC006571, AC006449, AC002350, AL080243, AC004815, AC016025, AC004146, AC005696, AP000359, AC004848, AC001228, AC006040, AL109939, AL135744, AC000045, AL023913, AL080102, Z97034, AF196779, AC003029, AL022163, AC007390, AC002429, AP000115, AL022302, AC007114, AC005868, AC006312, AC005180, AP000402, AL031777, AC006482, Z83823, AC005529, AC006285, AC009721, AC006014, AC005901, X74558, AC006061, AC004812, AC004626, AC004832, Z89666, AC004765, AC006571, AC005747, AC000727, AC002448, AL008718, AC005841, AC006480, AP000141, AC000025, AL035072, AC005288, AC004997, AC005300, AC002347, AL132774, AC007298, AC005488, AC007151, AL034430, AC004755, AC006063, AC006208, U82668, D87675, AC003048, AC004975, AC005486, AC000353, AP000132, AP000210, AC006006, AC008101, AC002544, AB020859, AP000030,</p>

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HMSHT46	3437	959516	1 - 242	15 - 256	
HMSHU10	3438	964646	1 - 401	15 - 415	AA780867, AA746360, AL367306, AC004540, AL080243, AL031577, AC005086, AC005546, AC007227, AF001548, AL031255, AF024533, AL035455, and AC016473.
HMSHU55	3439	731775	1 - 507	15 - 521	
HMSHV09	3440	731740	1 - 343	15 - 357	
HMSHV44	3441	716596	1 - 531	15 - 545	H67330.
HMSHW22	3442	855779	1 - 380	15 - 394	
HMSHW84	3443	783036	1 - 274	15 - 288	AC006241.
HMSHW93	3444	792302	1 - 299	15 - 313	R25210.
HMSHW97	3445	933331	1 - 494	15 - 508	
HMSHZ03	3446	924136	1 - 523	15 - 537	
HMSHZ56	3447	733386	1 - 302	15 - 316	
HMSIA12	3448	948521	1 - 714	15 - 728	
HMSIB73	3449	578777	1 - 433	15 - 447	AA936787, and AC003902.
HMSIB86	3450	785493	1 - 576	15 - 590	M62052, and AC007263.
HMSIC37	3451	685586	1 - 408	15 - 422	
HMSIC72	3452	740365	1 - 359	15 - 373	
HMSID81	3453	774047	1 - 489	15 - 503	
HMSIE11	3454	967013	1 - 124	15 - 138	AA312074.
HMSIE52	3455	727146	1 - 353	15 - 367	AA525024, AA525066, AA5295766, AA524685, AB194785, N71720, AL001643, AA502477, NS7913, R59126, AL147155, AL1282710, AC003080, Z83847, AC005500, AC002352, AC000353,

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HMSIG74	3456	725842	1 - 420	15 - 434	R96445, and HT0887.
HMSI81	3457	385927	1 - 311	15 - 325	AA487995, AL0469687, AA487884, F18394, AA776236, AW383129, AL245679, AL364570, AL800021, AW118517, MT77950, AH71374, AL355281, T56067, AA364193, AA654998, AL589902, AW157599, AA662017, AA359366, AA365248, AA102412, AL561335, AA584588, AA648064, AA652348, AA299151, AA593533, CL15073, AA670525, AA400762, AA862213, AW383634, AL148245, A910609, AS97832, AL631232, AL832782, AA003113, AL119649, AW320213, ALW383608, AW383628, AA533450, AW383440, AW383542, AW383386, AW276172, AL952786, AL986251, AW383596, AW383605, AW383624, AW383604, AA653221, AA653975, AL367471, AL367401, AL355224, AL367420, HI5679, AA004990, AL047602, AW272925, AL805380, AH18327, AL072095, AL186470, AL720431, AL684208, AL753567, AA632407, AL677668, NA1759, AW082063, AA704147, AA533038, AW025031, T29360, H61393, AL048266, AA54587, AL538928, AL613473, AL635314, AA088841, AL135674, AA704123, AL341664, AL806850, AL198376, AA541737, AA094651, AA302970, AL682098, AL744188, AA053551, TS8118, AW190947, AL915068, AL283761, F35659, AA044999, AL357477, ALA364224, AA399601, AA228830, NZ5303, AA323547, AL323547, T67425, T05319, AL937687, ALA13902, AW021285, AL112925, NT0648, AL493534, AA635331, AA437161, AA535661, AL619997, AL521901, AL306524, AL925040, R80865, AL624698, R94534, WA5536, RA4293, AW193512, ALA83833, AL249997, AL055547, AA702023, ALA613893, AL744170, AA091452, AL174535, ALA164960, AL572564, AL699060, H64560, AA179090, ALH93634, AA092106, AA284184, AL783494, ALA669522, AL270343, AW172727, AL439360, AL829331, AL802526, AL679713, W74444, AL587565, AA553385, AL287964, AL587583, AW151884, H97666, AL61255, AW383560, AW338086, AL332215, AW383455, AW383629, AA668110, AL023593, AL341548, AL179136, AL366071, AL079528, AL041382, AW383829, AL915293, AC002957, ALA756979, AL110760, AW084251, W04195, AW103415, AL192695, AA481363, AL037574, F98660, AL582890, AW084525, AA481375, AW241511, AA362700, AW241456, AA584749, AA826144, AL805563, Z98473, AL281474, AA532955, AA342958, AA443065, AL720177, AW327282, AL455675, AA507246, AL435681, AL038833, AA491814, R26134, H60735, AL003176, AL041706, AL633390, AL034402, AC005815, AC002301, U24498, AC002457, AL064866, U95090, AL020995, AL021938, AC000667, AC005661, AC04929, AL031722
HMSI81	3458	916552	1 - 278	15 - 292	

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HMSIN64	3459	963441	1 - 559	15 - 573
HMSIN75	3460	728670	1 - 299	15 - 313
				AA400632, AA368986, AA400317, AA811357, AB15926, AA353038, AB15728, AB86832, AA54783, AA740345, AA676886, AB833007, AB090223, AB148002, AW081785, AH403607, AA513753, AY797479, AL191303, F26406, AB188727, AA536076, AB432454, R07547, AB36523, and AB970899.
HMSIO61	3461	741811	1 - 398	15 - 412
HMSIO76	3462	767680	1 - 396	15 - 410
HMSIP13	3463	792379	1 - 602	15 - 616
				AC005950, and AC001228.

HMSIP59	3464	739275	1 - 477	15 - 491	
HMSIS02	3465	920078	1 - 438	15 - 452	
HMSIT63	3466	745068	1 - 360	15 - 374	
HMSIT73	3467	708077	1 - 309	15 - 323	
HMSIU50	3468	706363	1 - 349	15 - 363	
HMSIV17	3469	712318	1 - 505	15 - 519	
HMSJA36	3470	685633	1 - 242	15 - 256	
HMSJA69	3471	745227	1 - 323	15 - 337	
HMSIB02	3472	920065	1 - 552	15 - 566	
HMSIB64	3473	969637	1 - 356	15 - 370	
HMSIB83	3474	781172	1 - 303	15 - 317	
HMSIB93	3475	676414	1 - 411	15 - 425	
HMSIE47	3476	928252	1 - 527	15 - 541	
HMSIE52	3477	868167	1 - 455	15 - 469	
HMSIE69	3478	513164	1 - 598	15 - 612	
HMSIH79	3479	760667	1 - 420	15 - 434	
HMSIJ22	3480	674557	1 - 584	15 - 598	
HMSIJ24	3481	928152	1 - 651	15 - 665	
HMSIJ83	3482	781094	1 - 312	15 - 326	
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					<p>             A1859251, A1669453, A1921188, A1627581, A1053790, A1603445, A1744297, A1252085, A1768342, A1865364, A1252114, F19136, A1022379, A1792903, A1704643, A1792864, A1739577, A1734002, A1745330, F32808, A1709363, A1612152, A1922002, A1679009, A1666407, A1927741, A1963095, N17729, R52326, A1002422, Z84487, A1031650, A1004963, A121578, A1004020, A122126, A1004079, A1031286, A1005026, A1003682, A1005191, A1007106, D84394, A1031285, A1109847, A1000355, A1007563, A1021397, A1009241, A1031584, A1002990, A1004706, U69730, A1006367, Z98755, A1031387, A1069995, A1032821, A1035608, A1000567, A1022394, A1004047, A133241, Z83840, A1004993, A1006660, A1000506, A1006046, A1049636, A1023279, A1005342, A1006924, A1008282, A1049775, A1000882, A1022098, A1004180, A1006197, A1022329, A1004025, A1003029, A1004385, A1005476, A1007486, A1080238, Z83841, A1000062, A1050343, A1007684, A133249, Z94277, A1000507, A1007214, A121823, Y10196, A1031255, A1003013, A1004865, A1001196, A1004383, A1010209, A1006271, A1006997, A1005186, A1015752, A1031388, A1010072, A1006525, A1020867, Z83822, Z84470, A1007402, A1004038, A1031686, A1009172, A1001137, A1006996, A1003049, A1004067, A1006143, A1109852, A1023876, A1007637, A1090776, A1009399, A1008723, A121882, A1005722, A1049781, A1003010, A1004053, A1006120, Z82194, A1007245, A1002367, A1031446, A10010349, A1034350, A1006287, A1008123, A1004629, Z84469, A1004921, Z99128, A1003960, A1004478, A1002466, A1006062, A1002412, A1008012, A1007885, A1006113, A1004087, A1002457, A1122023, A1000240, A1011604, A1109801, A1023807, A1004393, A1004074, A1133163, A1005969, A1000004, A1049834, A1021392, A1004014, A1005832, Z83820, A1006441, A1121871, A1006079, A1133289, A1002524, A1031653, A1007666, A1000470, A1006966, A1002060, A1049589, A1022158, Z97876, A1002463, A1006582, A1004528, Z75741, A1007687, A1000659, A1004231, A1137100, A1007320, A1022720, A1096817, A1004835, A1020868, A1049874, A1004081, A1002287, A1035696, Z95329, A1109654, A1007786, A1000475, A1005229, A1006210, A1000086, A1002476, A1109755, A1008710, A117338, A1007159, A1001209, A1109754, A1001422, and Z70225.           </p>
HMSIL41	3483	922753	1 - 504	15 - 518	<p>             A1022721,           </p>
HMSIM33	3484	702408	1 - 411	15 - 425	<p>             A1005233,           </p>
HMSIO36	3485	708084	1 - 397	15 - 411	<p>             A1502207, A1078409, A1635150, A1003391, A1182569, T16427, A1112646, A1551062, A1507563, A1458452, A1228442, F02399, A1135490, A1661590, A1021354, A1446478, A1032550, A1720732, A1722505, A1582554, A1704643, A1190648, A1270476, A1759493, A1302594, A1413406, A1021388, A1040051, A1081303, T03928, A154243, A1453221, A1538075, A1631915, A1054170, A1610468, A1483103, A1862716, A1583466, A1004893, A1031597, A1004685, A1002544, A1035420, A1005839, A1000501, A1132777, A1006210, A1004000, A1005049, A1002476, A165926, A1022476, A133246, A1000353, A1006211, A1007096, A1035685, A1031774, A1005531, A1005081, A1000103, A1007526, A1007637,           </p>

HMSIO44	3486	716600	1 - 378	15 - 392	AC003043, AC007225, AC005274, AC004973, AC007773, AC005089, U91326, AC007993, AC031735, AC005411, AC005480, AC004033, AC005535, AL117352, AC004079, AC008116, AC004796, AL049697, AL031118, AL031667, AP000355, AC002492, AC003029, AP001052, AC000003, AL031432, AC004895, AL031673, AL008718, AC007216, AL050327, AB023048, AL121653, AL132712, AC004129, Z84487, AF196969, AC005064, AC005011, AC004139, Z82200, AC005777, AF038458, AC004686, AC004834, AC005412, AC004851, AP000211, AP000133, AC005363, Z97630, AL008710, AL034402, AC006077, AF053356, AC004526, AC008134, AL035072, AC004231, AL035683, AP000555, AL022313, AL022396, AC006452, AF134726, Z83826, AC004913, Z81365, AL049874, AL035450, L78810, AF030453, AC004551, AC006581, AC005837, AC004596, AC005907, AL033524, AF111169, AC006311, Z98941, AC003101, AC004841, AL008629, AC007226, AC005822, AC004814, AL049839, AL034582, AC007510, AL133448, AL034400, AL035413, AC006241, AL109758, AF001550, AC016830, AC005874, AL136295, AC005228, AC007387, AC005520, AC007263, AL049569, AC002369, Z85996, AL136295, AC005228, AC007387, AC005520, AC007263, AL049569, AC002369, AL022165, AC004019, AC005229, AC002565, AC006039, AL005587, AL121658, AF067844, AL035249, Z98731, AC004216, AL034548, AC003663, AC005722, Z94036, AC002354, Z82190, AC005332, AC004073, AL035089, AC005015, Z99716, AL035455, S42653, AC002354, Z82190, AC000159, AC004963, AC006449, AL035405, AC006441, AL049776, Z98304, AC008372, AC003962, AL031053, AC005154, AF001549, AC004655, AC005537, Z97053, AC006452, AC005881, AB020868, AL020993, AC005088, AL109952, AP000563, AC002430, AC002300, AL049759, U95739, AC004020, AL133163, Z93023, Z83843, AC002553, AC003035, AC007688, AC002350, AC005755, M89651, AC007384, AL031680, AC002302, AC005736, AC005209, AC003684, AC006126, AC002126, AL109984, AC000025, AC004876, AC004707, AC002375, AC005828, AL109627, AL021395, AC005280, U91323, AC006273, AB003151, and AC004678, AA740736, W61253, AA780648, AA167179, AL150934, T03928, AA743718, AA598889, AA865640, AL082130, AC007421, AC002091, Z82206, AP000691, AC006047, AC006454, AC004185, AL031680, Z69638, AP000692, AL033527, AC006538, AC016025, AL122020, AC007684, Z85986, AC002481, AC006511, AF217403, AL133249, AL022323, AL031311, AP000509, AC004668, AF196969, AC006960, AL109963, Z85994, AL049641, AL031846, AL021528, AC005342, AF207550, AC004953, AL031602, Z98941, AC005829, AC005332, AF111168, D84394, AP000228, AL031597, AP001056, AC005694, AL035455, and AC004017, AA565398, AA382192, T73974, N87333, AW132065, AA557727, AA639939, AL049924, AL281622, AB87197, B57089, H59974, AA654293, AL11936, AL022363, H07930, AA070614, AA370883, AA618451, AA466297, N27874, AL060129, AL754653, AA468318, AA669747, AA584765, K77715, AW271071, H80215, AL191949, AL423034, AA721581, AA165079, AL47641, F07225, T47096, AC005838, AL049646, AC002128, AL117354, AL049795, AL049712, AF118808, AF001905, AL137191, AC005994, AL049844, AL109865, AL022400, AF111168,
HMSIOR7	3487	854106	1 - 495	15 - 509	AA565398, AA382192, T73974, N87333, AW132065, AA557727, AA639939, AL049924, AL281622, AB87197, B57089, H59974, AA654293, AL11936, AL022363, H07930, AA070614, AA370883, AA618451, AA466297, N27874, AL060129, AL754653, AA468318, AA669747, AA584765, K77715, AW271071, H80215, AL191949, AL423034, AA721581, AA165079, AL47641, F07225, T47096, AC005838, AL049646, AC002128, AL117354, AL049795, AL049712, AF118808, AF001905, AL137191, AC005994, AL049844, AL109865, AL022400, AF111168,

HMSJ27	3488	855760	1 - 576	15 - 590	AC006313, AL035458, AC005730, AL035443, and AL034344.
HMSJR41	3489	967070	1 - 416	15 - 430	AA002166, AA256383, AA699351, AA176339, and AJ249977.
HMSJR74	3490	710402	1 - 427	15 - 441	
HMSJT11	3491	965007	1 - 1744	15 - 1758	
					AB95693, AA135585, AL137976, AA171140, AA745126, AB52492, AA436379, AL179403, AW006280, AA135524, AA234271, N22187, AA491640, AA256692, N17230, H23394, F12594, and AB011127.
HMSJT60	3492	733379	1 - 258	15 - 272	AA218874, AW0069273, N57205, AA831375, H81732, AA370795, T98915, T62975, AA370455, AA330772, AA28696, R79496, R93081, AA348602, AA72686, AA968509, H97358, AA676621, AA317096, H12383, AC005099, AC004448, AC007327, AC005921, AC000063, AL033523, AC005736, AC002395, AP000556, AP000557, X77744, AP000553, D87011, AC007240, AC004961, AC004821, AC007666, AC007227, AC000052, AC004019, AC007226, AL135744, Z81308, AL049766, Z82194, AL035415, AC010170, AP001053, AP000252, AL023755, AP000134, AP000212, AL080276, AP000031, AC008372, Z86090, AC005914, AP000281, AC007999, AP000039, AP000107, AL049576, AC004706, AC007055, AC007151, and AL117337.
HMSJT70	3493	756465	1 - 385	15 - 399	
HMSJT79	3494	954141	1 - 433	15 - 447	
HMSJU28	3495	686664	1 - 400	15 - 414	
HMSJV67	3496	751602	1 - 401	15 - 415	
HMSJV12	3497	902568	1 - 3126	15 - 3140	
					AA585278, AA283312, AA585378, AA585389, AB526112, AA585116, AA585325, AA585329, AA585430, AA585439, T48593, AA585356, AA585327, AA585098, AA585433, AB525306, T26387, AW366296, AA383351, AA585101, AB541402, AL540855, AB541515, AB5415243, AB5395, AB5476, AB005666, AR031338, AR017826, AR031365, AB131952, AR037157, X82786, X53499, AR008429, AR062871, A25909, AR007320, A70872, X93517, AA4281, AB4995, A70899, AR029417, A70869, AR060142, AR060137, A30438, Z79475, I30122, AR038669, AB1667, M60510, AB1666, AR060134, AB4772, AB4773, AB4775, AB4774, AB3076, AB134119, Z79435, U79666, AB1750, X84816, AR028672, AB005559, U89315, AR060057, AJ009991, AJ012010, Z31700, and AA4216.
HMSJV19	3498	744990	1 - 691	15 - 705	AL043195.
HMSJV25	3499	678096	1 - 534	15 - 548	AL122020.
HMSJZ11	3500	861381	1 - 587	15 - 601	
HMSKB02	3501	920056	1 - 488	15 - 502	
HMSKB24	3502	855883	1 - 196	15 - 210	
HMSKC56	3503	733388	1 - 397	15 - 411	AW058639, AB39743, AA465532, AL695594, and AL133112.
HMSKC66	3504	783028	1 - 371	15 - 385	

HMSKC90	3505	675055	1 - 373	15 - 387	
HMSKE32	3506	699273	1 - 383	15 - 397	
HMSKE62	3507	966084	1 - 387	15 - 601	
HMSKG23	3508	675885	1 - 381	15 - 395	AC004751.
HMSKC08	3509	959413	1 - 509	15 - 523	AC008545.
HMSKCQ60	3510	495734	1 - 513	15 - 527	AI203185, AW229380, AF094516, and AL122075. AW085811, AI188327, AI065031, AW069769, AA661583, HG4858, HG4884, AI962030, AW021399, AW023975, AI51848, AI609972, H59797, F35374, AI355246, AI042667, AL042670, AW023111, AI701898, AW237905, AW327673, AI250333, AW228331, AI733856, AI801479, AI890283, AI754027, AI439525, AI040051, AW069227, AI580472, I57096, AW243817, AI199578, AI748827, AW275432, AI121039, AI031759, AI702049, AW265468, AI321885, AI027275, AI744199, AW268793, AW021674, H38769, AA610381, AI044966, AI567676, AI884404, AI251024, AW268793, AW021674, H38769, AA610381, AI044966, AI754653, AI017251, AI744890, AA493546, AW162314, W04260, AA809546, AW020612, AI925812, AI003469, AA644090, AI254267, AW085626, F23338, AI859438, AA515728, AA507623, AI038936, AA812133, AI522753, AA503307, AW162332, AA640305, AI249365, AA526542, AI038936, AA812133, AI527680, AA421536, AW028376, AW148821, AI899177, AI267416, AA828834, AI312614, AW057760, AW410844, AI053696, AI221027, AI003068, AA526659, AA720732, AI000314, AI049955, AI133083, AA533660, AA526658, H86399, F29968, AW270385, N23504, AI547110, AI447093, AI036949, AI112864, AI947352, AI821901, AW020094, AW189853, AW268277, AI311796, AW301771, AI446618, AA653139, AI039237, AI246796, AW407007, H94598, AI872229, H62123, AI862716, AA593168, AI185160, M77964, AA636077, R79396, AI918661, AA807704, H47461, AI434103, AI679739, AI038533, N70293, AA600127, AI457313, AI064968, AI202777, AW190437, AI634187, AW131109, AI805556, AI361401, AA761454, AA428991, AA496042, AI363336, AI805373, AI343808, N35135, AW081610, AI732151, AA419107, AI653999, AA419014, AI798521, AI148820, AI566408, AI653776, AA502991, AI152398, AW419201, H68343, AA568303, AI0882104, AA604149, AA60202, T90477, AA595661, AA515727, R93919, AA364147, AA598545, AI801505, W27084, AA551062, AC006071, AC006006, AC005914, AC005695, AC00515, AP001116, AC006449, Z84474, AI022370, AC004876, AC004760, AC005826, AC005755, AI121603, AC005993, AC007666, AI031680, AP000048, AC005694, AC004263, AI009181, AC004671, AC004765, AP000558, Z97035, AP000309, AC007314, AI049591, AC006379, AC005064, AI035684, AC002351, AI022313, AC009247, Z83844, AC005037, AI133448, AC005527, AC004796, AI022336, AC005529, AI096712, AC005519, AC006344, Z83840, AC002418, AC005484, AI031255, AI031587, AI022721, AC009516, Z80232, AI034553, AP002080, AC007686, AP001068, AC005300, AC006539, AC004386, AP000252, AP000107, AI117391, AC004019, AI034379, Z95116, Z97181, AC007917, AC005902, AI035445, AC008498, AC005288, AC007285, AF031077, Z81450, AC005736, AI109847, AC007051,

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HMSKS66	3511	413201	1 - 426	15 - 440
HMSKU36	3512	966289	1 - 374	15 - 388
HMSKU90	3513	920151	1 - 734	15 - 748
HMSKZ29	3514	690662	1 - 341	15 - 355

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HMSLB94	3515	773812	1 - 317	15 - 331	AW193829.
HMSME83	3516	950970	1 - 600	15 - 614	
HMSMF12	3517	948393	1 - 443	15 - 457	
HMSMG02	3518	915179	1 - 369	15 - 383	
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HMSMI12	3520	969636	1 - 610	15 - 624	
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HMSMK12	3521	841898	1 - 658	15 - 672	RS1068, H18491, AW378532, D34614, AC006208, and AL022322.
HMSML27	3522	870008	1 - 344	15 - 358	
HMSMN04	3523	926746	1 - 179	15 - 193	
HMSMN23	3524	932548	1 - 708	15 - 722	N80156.
HMSMO05	3525	931022	1 - 98	15 - 112	
HMSMV92	3526	934140	1 - 502	15 - 516	
HMSMX68	3527	861333	1 - 412	15 - 426	F04478, A6661021, AW438643, AA492081, F09626, AL002834, AL634384, AA584167, AA992351, D52587, F19070, AW782304, AA780944, AW193265, AW276827, AL068846, AL046409, AL169997, AA347368, AA577906, AB860013, AL345157, AL1350211, AW194342, AA599920, AL289067, AL061334, AA623002, AL754658, AA873532, AL045808, AL046156.

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HMSNA44	3528	861293	1 - 615	15 - 629
HMSNR30	3529	968716	1 - 622	15 - 636
HMSNR92	3530	861314	1 - 612	15 - 626
HMSNX38	3531	974321	1 - 585	15 - 599
HMSOA29	3532	933329	1 - 455	15 - 469
HMSOA34	3533	936036	1 - 753	15 - 767
HMSOB43	3534	961779	1 - 321	15 - 335
HMSOC76	3535	916807	1 - 238	15 - 252
HMSOF03	3536	922858	1 - 401	15 - 415
HMSOG57	3537	861298	1 - 541	15 - 555
HMSOM08	3538	958216	1 - 557	15 - 571
HMSOM02	3539	918397	1 - 436	15 - 450
HMSOM77	3540	861288	1 - 613	15 - 627



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HMSO010	3541	963389	1 - 514	15 - 528

HMSOP01	3542	915083	1 - 580	15 - 594	AA020882, H64598, T60940, R78647, A123968, AA487219, AA487079, AA538487, T07225, AA515224, AC000059, AL079342, AL053079, AC003071, Z91020, AC005081, AC004655, AL035555, U80017, AL049776, AC005482, AP000704, AL021154, AL121754, AP000555, AC006336, AF179633, AF196971, AC009405, AL133245, AF000355, Z84469, AC002073, AP000350, AL031673, AC002395, AC006360, AF111168, AC005826, AL109809, AC004405, AC006121, AC003669, AC005873, AC005004, AF029308, U47924, AC005934, AL109620, AC006061, AL121757, AL049780, AC005369, AC006128, AL136295, AL031311, AL031257, AC005225, AL031985, AF130247, U46455, AC000666, AC007632, AC010205, AC004764, AC005399, AC007785, AC003051, and AC007091.
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HMSOQ75	3543	959856	1 - 245	15 - 259	
HMSOU16	3544	948198	1 - 631	15 - 645	

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HMS092	3545	947760	1 - 521	15 - 535	AA131030, and AA130991.
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HMVA174	3559	684574	1 - 518	15 - 532	AF150282, A1276243, AV090199, A1022691, A1249193, and A1033035.
HMVA126	3560	789064	1 - 689	15 - 703	
HMVAW08	3561	962197	1 - 280	15 - 294	AI580823, AA993162, A1472918, AI368750, AI453823, AA747678, AA888560, AW242191, AI550319, AA211927, AA725398, AA917463, AA742371, AA732102, AI218576, AI129408, AI474325, AA594345, AI310062, AI560613, AA056507, AA747426, AA905372, AI216359, AA405612, AA884092, AA879906, AI820689, AI150838, T32650, D02027, AA666388, R36652, AI372931, AI149128, AI963448, AA115748, AI290638, AV009341, AA524303, N32841, AI460321, AW076026, T24776, AA858246, T63577, AW118055, W31629, AW265569, AA676598, T63502, A85117, and AC005192.
HMVAV55	3562	574215	1 - 228	15 - 242	AI130740, AI131523, and AW016460.
HMVBA36	3563	698060	1 - 528	15 - 542	
HMVBBD70	3564	735696	1 - 549	15 - 563	
HMVBBD84	3565	782910	1 - 333	15 - 347	Z58983.
HMVB001	3566	916072	1 - 665	15 - 679	AA416619, AA416601, D20128, AI368157, T49382, AI805024, AA600863, AA368659, AI572680, AW407679, AA948891, AA287823, H53109, AV407007, AA338474, AW021674, AA600127, AA804187, AA598497, AI281672, T57096, AA814748, AA658083, AA362439, N55296, AA846046, AA640563, AI567676, AA598579, H48017, A7458666, AA526663, F31670, AA055647, AA315052, AW243817, AV022796, AA548921, H47461, N21434, AI571094, AA333957, H52795, AI520984, AA387835, C14724, AA602664, AA364147, AA4493546, AI126969, AA362440, T06339, AI079759, AA338238, AA457771, AW105463, AW273201, AW273146, AW592414, AA666195, AA143703, T15454, AI801479, AA668727, AA608880, AA604149, AI825901, AA831913, AA230221, AA665532, AA827490, F23221, AW162314, AA807704, AW162332, AI538404, AI21027, AI002863, AW439224, AA559208, AA338237, AI547110, N57782, AA488689, AA086042, AI031759, AI340941,



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HMVB034	3567	735873	1 - 1157	15 - 1171
HMVB026	3568	681408	1 - 516	15 - 530
HMVB030	3569	861196	1 - 516	15 - 530
HMVBW94	3570	883659	1 - 200	15 - 214

HMVCG47	3571	719936	1 - 398	15 - 412	
HMVC055	3572	868146	1 - 224	15 - 238	
HMVCR47	3573	661425	1 - 452	15 - 466	
HMVCT75	3574	715950	1 - 363	15 - 377	
HMVCX10	3575	963828	1 - 461	15 - 475	AL119355, AW392670, U46350, AL119319, AL119484, AL119463, AL119391, AL119497, AL119439, AL119335, AL119324, AL119457, 299396, U46349, AL119483, AL119443, U46347, AL119522, AW372827, AW363220, AW384394, U46351, AL119444, AL119418, U46346, U46341, A81671, AR066494, AR060234, AR054110, and AB026436.
HMVCY46	3576	662311	1 - 359	15 - 373	N99112, AW452701, AA428994, and AA766700.
HMVCZ64	3577	767714	1 - 350	15 - 364	AP000496.
HMVDA11	3578	861185	1 - 350	15 - 344	AA323534.
HMVDA30	3579	691608	1 - 306	15 - 320	AB033030.
HMVDF10	3580	970480	1 - 348	15 - 362	
HMVDF66	3581	915638	1 - 139	15 - 153	AA306716, AL272308, N46300, AA532331, and AL122098.
HMVDF83	3582	701907	1 - 344	15 - 358	AA129862.
HMVDG716	3583	861179	1 - 409	15 - 423	
HMVDH06	3584	934778	1 - 113	15 - 127	
HMVDI38	3585	709243	1 - 769	15 - 783	
HMVDJ75	3586	710475	1 - 543	15 - 557	N71412, W00789, N99736, T90278, N73838, and AL096710.
HMVDR49	3587	722581	1 - 367	15 - 381	AL034384.
HMVDT07	3588	952488	1 - 703	15 - 717	AL034562.
HMVDU16	3589	904807	1 - 1328	15 - 1342	W38609.
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HMVDW09	3590	625070	1 - 307	15 - 321	M30514, AF153205, AF003737, AL133098, AL102800, AL080074, A07647, AF057300, AF057299, AL137526, U96683, A45787, AL117440, AF185576, AL137476, AL133067, AF106827, AR038854, AF000145, Z72491, I00734, E04233, AF097763, E00617, E00717, E00778, E02221, X87582, L30117, Y07905, A90832, U68387, AR054984, AR013797, AL137273, AL117432, A1006417, E05822, U58996, AF210052, AF051325, AL049465, X92070, A08911, AF111849, Z37987, AL137480, U0881197, I19437, AL137533, U78525, AF008439, AC006371, I66342, AL122118, X83508, AF100781, AF132676, AF061836, AL137705, AL080086, AF095901, U49908, E06743, AF061573, AL137478, AL137292, U87620, and I41145.
HMVDW09	3590	878247	1 - 1205	15 - 1219	AW003291, AA927510, AA552415, AA210860, AW295775, AW450098, H14682, AW451140, AW450099, AA768028, AA323759, AA325907, R18955, AA588782, AA326001, AA726511, A045961, AA768029, AW294299, R43963, A1923497, A1204450, A1609388, A1766770, AW075933, B50434, A0405960, T99804, AA325957, AW028853, R50435, AA573803, AW388521, H58575, AA190436, AW388475, AA299925, A1673040, AA534412, T99909, A1798620, A1743143, A1745610, A1671112, A1952808, A1751485, AA609752, A1743323, AL137509, and AF207550.
HMVBEA91	3592	774609	1 - 210	15 - 224	T93923, AA693730, AA693709, and AA780005.
HMVBEF33	3593	701908	1 - 325	15 - 339	U69274.
HMVBH712	3594	750931	1 - 292	15 - 306	
HMVBH16	3595	527509	1 - 243	15 - 257	
HMVBG29	3596	890878	1 - 251	15 - 265	AL049844.
HMVBH47	3597	527593	1 - 328	15 - 342	AW405398.
HMVBK07	3598	954098	1 - 43	15 - 57	
HMVBK24	3599	524357	1 - 204	15 - 218	AA630672, AA487621, AA579179, AA779013, AW148507, AA127426, AW270343, AA618452, AA299189, AA101689, AW083855, A1382825, AA080866, A1459245, AA410788, AL037554, H53828, A1056177, H96467, AA018283, AV179306, A1434695, R31790, AA553720, AA527642, AW341869, A1733856, AW439555, AA493136, AA114077, AA487888, A1433864, AA828062, AA572713, AA320966, A1421755, AA610219, A1297666, AF000556, AC006153, AF000557, AL121652, AC006511, AC005037, AC005548, AL021407, AC000083, AC007707, AL034402, AL080243, AC006539, AC009464, AC007270, Z98752, AC006513, AL034549, AP000042, AP000110, AC007671, AC006050, A1022320, AC008079, AC002468, AC004815, AL022476, AC007057, AL031670, AL020995, AC008038, AC011504, AC007193, AP000359, AL031666, AC005038, AC011311, Z99716, AF029308, AC006210, AF111169, AC005971, AC002310, AC007055, AC004890, AC005011, AC006012, AL008725, AC004823, Z97352, AC012627, AL049761, AC004205, U66059, AC000025, AL117355, AC008072, AC004030, AL050318, AC004686, AP000226, AL031311, AC007242, AC008014, AF196779, AC005369, AC005158, AC004894, AC005565, AL110292, Z98048, AL031589, AC004263, AC004148, AC005484,

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HMWBM0 9	3600	967687	1 - 381	15 - 395	AL121534, H05681, T09309, N36636, AA853335, AA216518, AA115428, AA188847, AA404726, AF151803, and AL049839.
HMWBN56	3601	745698	1 - 442	15 - 456	AL121534, H05681, T09309, N36636, AA853335, AA216518, AA115428, AA188847, AA404726, AF151803, and AL049839.
HMWBO07	3602	839560	1 - 490	15 - 504	AA025913, H26505, AV080056, AA122271, AA495850, AA078104, AB011110, and AC004084.
HMWBR86	3603	731650	1 - 337	15 - 351	AA025913, H26505, AV080056, AA122271, AA495850, AA078104, AB011110, and AC004084.
HMWBV45	3604	861152	1 - 349	15 - 363	AA025913, H26505, AV080056, AA122271, AA495850, AA078104, AB011110, and AC004084.
HMWCG29	3605	723779	1 - 212	15 - 226	AA025913, H26505, AV080056, AA122271, AA495850, AA078104, AB011110, and AC004084.
HMWCQ09	3606	924634	1 - 534	15 - 548	AA025913, H26505, AV080056, AA122271, AA495850, AA078104, AB011110, and AC004084.
					AA350169, AA207226, AL039395, AA359708, AA371441, T84879, AA019568, AA307901, R35023, R59278, AA371174, AA359314, AA359967, and AL050286.
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HMWCQ58	3607	738372	1 - 585	15 - 599	AA814994.

HMWCV08	3608	960083	1 - 287	15 - 301	R71737, AA904211, AL357108, AL354333, AA775188, AA341865, A1754066, A1554405, A1690497, R39329, AA604495, AA373107, AA598605, AA362791, AA372669, A1049630, A1054536, AC005225, AC006064, AP006688, Z99716, AC006241, AC005839, U91323, AF024533, AC005971, AC005920, AC007666, AC007793, Z93783, AC000052, AC002312, Z83845, AC006211, AC006449, AC005666, AC004019, AC004491, A1008637, AC004983, AF036581, AC005696, AF064090, AC005516, AL121658, AC005229, A1003147, AL049829, U91321, AF134726, AF102137, AC000134, AF222686, AL109865, AC006312, AL049636, AC004526, AP000553, AF108459, L44140, AF111169, AL049830, AC004030, AL050348, AC004975, AL121694, AC004851, AL078593, AC0088040, AC002350, AC002565, AC004814, AL049394, AF220465, AF033356, AL021939, AC005924, AL031279, AC006057, AC007488, AC005015, Z98200, AL035071, AC004771, AC004531, AF196779, U89335, AL022326, AL035086, AL023807, AL049776, AL031659, AL031311, AL031053, AC005911, AC004890, AC005787, AF045555, AC002470, AL049709, AL121782, AP00104, AC007938, AC005527, AC007225, Z49258, AL031597, AL033538, AC005899, AL049538, AL022313, AL132712, AB023048, AL031291, AL136295, AC005288, AL136168, AC007393, AC004874, AC005228, AC004929, AC006552, AC007707, AL135746, and AL031283.
HMWCY60	3609	531395	1 - 294	15 - 308	
HMWDD54	3610	932261	1 - 598	15 - 612	
HMWDD75	3611	800023	1 - 304	15 - 318	AI809080, AA379813, AI924837, AI609008, AI492061, AI080471, AA860342, AW273457, AA723182, AW170759, U46317, AI693837, R68374, R27368, AA579485, AI809655, AA173648, AI280048, AA173958, AA903598, AA187926, AI674623, AA653977, AA182901, F13240, AB020860, L46722, and U21855.
HMWDF88	3612	906769	1 - 349	15 - 363	H94922, R78249, AA448990, R14119, and N47060.
HMWDH23	3613	676216	1 - 397	15 - 411	AI248959, AI969858, AA310772, AI935408, AI023405, AW139513, AI914255, and AFI61349.
HMWDL52	3614	921603	1 - 368	15 - 382	M86156, AI383528, AI648449, AA708182, AW149204, AI565505, AI569929, AA830935, AFI36415, AI915216, AW025607, AG635323, AI269112, AI301509, AI808701, AW275607, AI268340, N86439, AC004692, AC004389, AL022150, AF022141, AI229041, AC008372, AC005164, AC006957, Z70272, AC004103, AC004217, AL049710, AL080273, AI031585, AL050311, Z83745, XG3690, AI069997, AI096770, AC009308, AC005900, AC011422, AL035563, AC005532, AL049834, AC000060, AL021026, AC006152, AL133247, AL022154, AC005191, AC000113, AC006384, Z96074, AL122127, AF121872, AC006972, AC005376, AL049734, AF064857, AC007656, AC007313, AL020989, AL118497, AC004506, AL049563, AL118503, Z97055, AL121657, AC009399, AL136297, AC006984, AC002507, AL021068, AL136130, AC002368, AF121899, AC005537, AC006153, AL031965, L42098, U85195.
HMWDQ83	3615	558021	1 - 351	15 - 345	AI050308, AE000658, AC005022, AP000161, AP000019, Z98052, AL023582, AC002366, AP001905, AC006083, AC004963, AC000665, AL022401, AL008633, AP000835, AC004981,

					AP000949, AL080277, Z08755, AL049647, AC006600, AL031121, Z82211, AC005245, AL021307, AC005483, AC006054, AC004941, AL049871, AC007563, AC006928, AC005393, Z95328, AF130247, AC005162, AC005981, AL049767, AC004843, Z98948, AC004384, AC004066, Z47556, AL022157, AF165138, Z84476, AL133512, AC007102, AC005915, AC002326, AF114156, AC010169, AL132708, AC006151, AC005536, AC003403, AC005701, AP01067, AL121595, AL109758, AC006257, AC007567, AP000965, AP000459, Z82212, AL096704, AC003084, Z49918, AC006257, AC007567, AP000965, AP000459, AC005036, AC000029, AL121576, AF172277, AL031230, AF201337, AL035451, AJ011930, AC004993, AL031116, AC010382, AC005509, AL121838, AP00150, AC004038, AC007934, AF117829, AC005337, AC005999, AP00009, AL030998, AC010200, AC005078, AC003683, AL009479, AC006369, AC007298, Z82975, AC002545, AP000457, AL034403, AC004677, AL049549, AC004551, AP000704, D87010, Z83820, AL022577, Z83848, AL110595, AL008728, AC006976, AC009286, AF070718, AC006149, AP000022, AC007564, AF003528, D87009, AC008071, AF118808, AC002492, AC007128, AP000163, AC004074, and AC004020, AL137658, and AC005343.
HMWWDW6 0	3616	712083	1 - 302	15 - 316	
HMWWDY93	3617	573513	1 - 371	15 - 385	
HMWWDZ73	3618	573754	1 - 221	15 - 235	
HMWWDZ77	3619	573494	1 - 237	15 - 251	AA552576.
HMWWE04	3620	709334	1 - 312	15 - 326	AA158500, H50330, H43516, Z44332, Z60555, and Z65232.
HMWWE24	3621	781017	1 - 361	15 - 375	AL760719.
HMWEU73	3622	767384	1 - 360	15 - 374	AW328173, AW152205, AW385309, AA279517, AL167428, AA452524, W65387, AT745322, T63422, AL826716, AP789891, AL181895, W61291, AA828979, AW410086, AA098876, AA364030, AA773566, AA095538, AA098877, AA888692, AJ007398, AC007226, and AC007371.
HMWWEK11	3623	967362	1 - 925	15 - 939	Z46095, AA458817, AA601434, AA340097, AA364315, AL008729, AC004510, AC004791, Z85986, AL022400, AL135783, AL049797, AC003101, and AP000962.
HMWWEK39	3624	573604	1 - 235	15 - 249	AL224170, AL224166, AL224169, AL224168, and AL224167.
HMWEW8 5	3625	783973	1 - 376	15 - 390	AA913138, AA423926, AA913371, AL223267, AL131310, AW451350, AW402718, AA825964, AA831628, AA054510, AW151296, AA813817, L44288, AW450780, AL470126, AW241985, AL117223, AA084799, AW169986, AA482277, AA482179, W07615, AA535546, AA469966, NS0150, H92386, R88465, AL080018, and H02524.
HMWEF07	3626	953749	1 - 806	15 - 820	AA026434, AA026362, AW371765, and AB002340.
HMWEF31	3627	861129	1 - 303	15 - 317	
HMWFEC21	3628	752826	1 - 363	15 - 377	AC002398.
HMWFEB01	3629	917150	1 - 122	15 - 136	

HMWFFH47	3630	738220	1 - 473	15 - 487	T86765, AA355300, AA62872, AA313285, W9312, AA373610, AA314442, AW327419, N28311, W26959, AW246991, AA147465, AL193121, AA143349, T85873, AA026924, W07364, AA355802, AW160522, W02991, H11880, C04326, N28909, AW162940, AA112862, AA147394, AW190189, AL169465, AW246218, AW079419, AA156348, and AF132959.
HMWFFI54	3631	573598	1 - 262	15 - 276	AC002454, and AL118497.
HMWFFO10	3632	954979	1 - 177	15 - 191	H71678, AA568314, AW419389, A1889696, AA602906, A1613389, AW151824, AA593501, A1271762, AA622801, AA502207, N73060, AA610433, AL791475, AL042373, AA152404, AW237905, AW023111, AL251429, AW117740, AA708678, AW177869, AA640490, F17700, AA747757, AA347969, AA077776, AL187148, AC005726, AC004750, AC004647, AC005046, AC002120, AL031670, AP001115, AC005412, Z94056, AL030348, AC005015, Z83844, AC006130, AC007263, U91323, AP000501, AF207550, AC005004, AC006006, AC005039, AL121603, AL109628, AC007240, AP000694, AF126403, AL049830, AC004975, AC003982, AL031283, AL049712, AC004832, AP000047, AC005695, AC001118, Z95115, AC006449, AC006146, AC005081, AP001056, AC007199, Z98742, AL096701, AL139054, AL096774, AC005209, AL132712, AL049569, AC005625, AC004139, AL035443, AC005696, AC005391, AC007845, AC007151, AL109627, Z84488, AP000305, AC002425, AC007934, U91326, AC005730, AC006487, AF108083, AL035681, AL031657, AC016025, AC004622, AC002347, AC004583, AP000120, AF109907, AL031281, AC003070, AL031846, AC007450, AC003108, AC006120, Z95132, AC002470, AC006271, AC005736, AC007686, Z83838, AL031591, AC007687, AC004858, AC005971, AC002059, AC002365, AC006050, Z82180, AC007114, AL121658, AL031587, AL135783, L78810, Z83826, AC007283, AF196969, AC004966, AP001051, AC006530, AC020663, AL133163, Z84466, AC005291, AC006388, AJ246003, AC006101, AL035400, AP000556, AL133246, AL021393, AC005486, AC005193, AL034423, AC000025, AC008012, AC005684, AC005251, AC004887, Z85987, Z93241, AL031597, AP00167, AP000052, AC003043, AL109984, AP000552, AL024498, AC002302, AP000553, AC005220, AL038458, AD000091, AC007052, Z97181, AC004841, AC007993, AP000503, Z85986, AC005969, AC006960, AL035683, AP000555, AC005972, AL031295, D88268, U62293, AC005778, AC005531, AF129756, L44140, AC003688, AC005529, Z98752, AC004509, AC004253, AL049757, AC006236, AC005666, AC005057, AB020864, Z83840, U95742, AL022237, AC005940, AC003037, AC004763, AL049694, AC007546, AC0060430, AC004601, Z98036, AC004791, AL021155, U91322, AB020866, AL009181, AL034582, AL022302, AC002375, AC005003, AC004813, AL121652, AC005943, Z84480, and AC005839.
HMWFFQ91	3635	573551	1 - 251	15 - 265	AA453990, and AL696031.
HMWFFR11	3636	967371	1 - 113	15 - 127	AL022318.
HMWFFU05	3637	861119	1 - 319	15 - 333	



HMWFLU5	3638	659578	1 - 658	15 - 672	AA76558, AI744905, and AI035977.
HMWFW7	3639	727236	1 - 225	15 - 239	AC004878, AC006014, AC006480, AC005488, and AC005071.
HMWGC08	3640	959838	1 - 500	15 - 514	
HMWGF22	3641	861104	1 - 351	15 - 365	
HMWGG55	3642	920575	1 - 313	15 - 327	
HMWGR55	3643	576885	1 - 362	15 - 376	
HMWQG80	3644	575822	1 - 337	15 - 351	CI6083, AR031682, and AR050617.
HMWGT07	3645	953454	1 - 946	15 - 960	R69751, R70467, H80879, H80878, H69771, AI011930, AI049835, Z95126, Z94277, Z84481, AI023279, AI022152, AC002071, AC010186, AC005303, AC004985, AI008706, AI034545, AC004825, AI033466, AC006007, and AI023379.
HMWGU64	3646	823460	1 - 415	15 - 429	AA292171, AI194002, AI291200, AA702786, AA933514, AW149691, AW134516, AI570407, NS2183, AI470179, AI001560, AI565962, AI263083, AA442075, AI262533, AI992355, AA725905, AA458151, AI057281, AI350058, AT765586, AI300345, AI147626, N23467, AW083096, AI304886, AI818816, AI298938, N31044, AA442178, AA251570, AA411536, AI917092, AI084370, AI200607, W2941665, AW270856, AI298116, AI948774, AI693857, AI337892, AI216845, W92870, W35349, AW275375, R64446, AW304070, F69033, W92747, AI215812, R56870, AA854471, W32863, R63834, AI340931, AA373328, AA251002, R26470, R28480, H39705, AA737193, AA737108, H61908, and AI348059.
HMWGV63	3647	576854	1 - 224	15 - 238	AI872915.
HMWGX38	3648	709249	1 - 395	15 - 409	AW449350.
HMWGX50	3649	959293	1 - 1759	15 - 1773	AI823360, N76186, AW444682, AA199658, AI090198, AI374757, N64773, AI769715, N53704, W49400, AI026060, AI801785, AA961099, W49491, AI190947, AI287331, AI742199, AI769707, AI219372, R72390, R63399, R69629, R69723, AA064629, H18928, W73451, D20803, AA527475, AI877711, AI472100, W73390, H19390, AI064753, R63455, and AI093177.
HMWHA91	3650	684346	1 - 315	15 - 329	AA654781, AI754544, R73754, AW080183, AA584125, AA331580, R08918, AA845209, AA487726, AW081194, AA633762, AI037910, W341978, AC004690, AC019014, AI080248, U78045, AC007981, AC006120, AC004953, U41069, AC004854, AI133238, AC008062, AI021978, AI022336, AP000556, AC004805, AC005377, AC009721, AF109907, AC008018, X92412, AI021579, AI031659, AC006343, AC005144, AI022312, AC006130, U85195, AC006006, AC003102, AI035464, AC012330, AI000658, AC006146, US2112, AI022313, AI049872, AC004590, AC008132, AC008079, AC004531, Y14768, AC005887, AF129756, AC005871, AP000550, AC005752, AI032821, AC004859, AI121591, AP000557, AI034548, AC005175, AC000381, AC007421, AP000505, AC005800, AI021154, AI136295, AC004752, AC000094, AC007546, U85196, AC003663, AC007325, X69516, AP000240, Y15994, AC003950.
HMWHB03	3651	861108	1 - 371	15 - 385	

HMWHF58	3652	584538	1 - 424	15 - 438	AI035417, AC004966, AI008723, AC008115, AC005043, AC006459, AC005353, Z777249, AI009172, AC004993, AD000813, AI049765, AC004033, and AC006478, AI763355, AI911988, AW271204, AI199535, AW196356, AA831500, AA705874, AI609777, AI623267, AA825907, AI247514, AA897761, AA029912, AW088307, AA059231, AA883186, N72988, Z40302, W03288, H82082, W57671, H61166, AW264318, F01458, AI270229, AI932770, AW070350, F04303, AI318375, H93492, AI304462, AI304550, AI270299, R03209, AW369598, and R07861.
HMWHM30	3653	676413	1 - 320	15 - 334	AP000333, and AP000173.
HMWHN70	3654	851334	1 - 342	15 - 356	R19936, AI653255, AI261658, W78776, T85433, AA309754, H16895, AA132626, AA216686, AI636091, AA160797, AA312101, T69055, T35768, and AI347190.
HMWHHS25	3655	678166	1 - 323	15 - 337	AI031685.
HMWHHZ50	3656	724431	1 - 496	15 - 510	AC006427.
HMWIA18	3657	424132	1 - 342	15 - 356	AA011418, AI264860, and AA699615.
HMWJF10	3658	964707	1 - 441	15 - 435	AA056297, H86332, H81699, AA021646, AA828136, AA252828, AW366161, AW366143, AW366126, AW366153, AW366129, and AB032976.
HMWL167	3659	791275	1 - 771	15 - 785	
HMWM126	3660	681845	1 - 300	15 - 314	
HMWTQ47	3661	653198	1 - 364	15 - 378	AW236288, AF045555, and AC005081.
HMWS196	3662	746475	1 - 680	15 - 694	AB011167.
HMWT95	3663	793450	1 - 422	15 - 436	AI160190, AA226732, AA232883, AA948725, AI079958, AA767922, AI467979, W39443, U83194, and AF121856.
HMWTL48	3664	917690	1 - 437	15 - 451	AA203110, AA465513, T96285, AI682937, and AA337698.
HMWTV48	3665	795649	1 - 364	15 - 378	AC004913.
HMWTX21	3666	670972	1 - 201	15 - 215	AA939053.
HMWJ203	3667	924227	1 - 283	15 - 297	AB011085.
HMWJ209	3668	668700	1 - 342	15 - 356	T24065.
HMWJC76	3669	688926	1 - 393	15 - 407	AA300776, AA341396, AI225022, and AF030428.
HMWJF10	3670	964705	1 - 339	15 - 353	
HMWJG85	3671	918724	1 - 509	15 - 523	AA102161, T68018, N86357, and AF144757.
HMWJH15	3672	757807	1 - 211	15 - 225	
HMXXA03	3673	964494	1 - 60	15 - 74	N24413, and AA325761.
HMXXA08	3674	959267	1 - 213	15 - 227	R16911, AI023774, AC005509, AI135960, and AI131016.
HMXXA39	3675	670501	1 - 212	15 - 226	AI766637.
HMXXA56	3676	733331	1 - 42	15 - 56	
HMXA821	3677	714384	1 - 122	15 - 136	AI908994, AI908998, AI909070, AI909069, N34111, AI908998, AA365524, AA143042,

				AI008987, AA365526, AI090065, H69944, AI090066, AI08986, W37554, AA291887, AI090072, AI049386, and AI133036.
HMXAB69	3678	661849	1-136	AI024509.
HMXAC70	3679	964492	1-138	M85519, and AC005625.
HMXAC83	3680	780385	1-105	AC004620.
HNEAB76	3681	674781	1-242	AA701643, and AI033306.
HNEAC51	3682	523767	1-422	AI033306.
HNEAJ21	3683	671370	1-341	AI033306.
HNEAJ57	3684	735083	1-341	AI033306.
HNEAK41	3685	711557	1-227	AI033306.
HNEAN61	3686	507302	1-200	AI033306.
HNEAN85	3687	524222	1-384	AI033306.
HNEBI66	3688	529168	1-249	AI033306.
HNEB008	3689	958742	1-899	AI033306.
				AI014747, AI0371165, AI149061, AI060786, AI537814, AI111171, AC002302, AC005666, AI109798, AC004841, AC004938, AC004217, AI020597, AC004383, AI001349, AI033460, AC007216, AP000501, AC005529, AP000505, Y14768, AC004159, U62293, AI022165, U63721, Z95115, Z97630, AI049631, Z83996, Z84469, AC009516, AC000353, AC005287, AI133485, AC004634, Z84466, AC005911, AI129756, AP000049, AC007686, AC004817, AC004887, AC005332, AC006211, AP000311, U91323, AI049569, AC007057, AC005531, AC002115, AC002301, U95742, Z95152, AC005520, AC004491, AC000026, AC005355, AC004230, AI023807, AI034548, Z73359, AI031311, AP000689, AI031657, AC002059, Z95116, AC008044, AC007993, AP001065, AC004876, AC005581, AC005102, AI022721, AC005071, AC008018, AC005765, AF121781, AC005781, AI035414, AP00215, AI022326, Z97056, AP000350, AI035685, AC004985, Z97053, AC005871, AC004000, L78810, AC005005, AC006101, AC005803, AI049699, AI022163, AB003151, AC004765, AC002425, AI109984, AC004020, Z98031, AC009247, AC005585, AI033659, AI096763, AC004966, AC004685, AI049872, AC008372, AC004750, L44140, AC005527, D87675, AC007384, AC002430, AC002544, AP001052, AC002369, AC004832, AP000039, AP00107, AC005280, AI022323, AC002073, AC006450, AI133163, Z99128, AI031650, AC005620, AI023575, AC004228, AC004991, Z98730, AC006538, AP000047, AI096791, AI021393, AC002299, AC005722, AI132987, AC005815, AC005037, AF107885, AP000498, AC003982, AC005200, AC005777, AC007421, AC005261, AC005086, AC004656, AI034417, AC002477, AC006057, AI049856, AI008721, AC002551, L78833, and AC005952.
HNEB35	3690	529576	1-303	15-317
HNEB48	3691	919274	1-515	15-529
HNEB007	3692	954173	1-637	15-651

HNEBY19	3693	527894	1 - 341	15 - 355	
HNEBY26	3694	527891	1 - 318	15 - 332	
HNEBY30	3695	523571	1 - 316	15 - 330	
HNEBY32	3696	527889	1 - 392	15 - 406	AA047509, AA649294, AA743885, and AA714682.
HNEBY34	3697	507211	1 - 483	15 - 497	AB02200.
HNEBY44	3698	773793	1 - 422	15 - 436	
HNEBY46	3699	527887	1 - 395	15 - 409	AC006006.
HNEBY48	3700	527895	1 - 308	15 - 322	AL021977.
HNEBY71	3701	527883	1 - 245	15 - 259	
HNECD65	3702	861062	1 - 511	15 - 525	
HNECEB07	3703	954094	1 - 370	15 - 384	
HNECEB14	3704	927590	1 - 94	15 - 108	
HNECF59	3705	507208	1 - 102	15 - 116	AL017707, AT733633, and AC006001.
HNECF76	3706	506532	1 - 326	15 - 340	
HNECF157	3707	529873	1 - 165	15 - 179	
HNECK47	3708	720588	1 - 331	15 - 345	
HNECK66	3709	932501	1 - 374	15 - 388	AC002073.
HNECK67	3710	527100	1 - 398	15 - 412	AA836909.
HNECK83	3711	935045	1 - 684	15 - 698	
HNECL71	3712	527810	1 - 221	15 - 235	
HNECM64	3713	861031	1 - 289	15 - 303	T79573, AA525832, AA381390, AD07738, AA503018, AL039801, T79503, AA601713, AB62790, AA319995, AA856945, AA381962, AL434365, H23540, AA223512, AA297145, AA629852, AA765678, AA487892, AA829576, Z84487, AL050348, AT229041, AL136295, AL133312, AC002302, AL022336, AC004638, AC004698, AC005003, AC004910, AL136295, Z93016, AC004526, AC003003, AL031680, AC002389, AC005037, AC002378, AC007226, AC006160, AL031668, AL121655, AL008583, AL031602, AL035071, AL121658, AC002390, AC000159, AC003378, U73023, AC002350, AP000511, AC000403, AC001231, AL121653, AC004882, AL050307, AB023051, U47924, AL009181, AC005212, Z82208, AF196969, AC005102, AC006509, AC007537, AC004212, AC006064, AF015720, AC006512, AP000512, AC004922, AL031281, U32112, AL022396, AL031230, AC007159, AC003859, AL034553, AC007308, AC005874, AF134471, AC004865, AC002470, AC007283, AC002544, AC004985, AC000113, AC006030, AC005529, AC012083, L48038, AC005225, AC007731, AC005500, AL031432, AC007690, AC005332, AC005089, AL024507, AC006649, AP000504, AF129756, AC004382, AC005344, AL022238, AC004448, AC005399, AC006065, AC002375, AC006262, AD000812, U91326, AD001527, AF111168, AB003151, AC006381, AC004491, AL049636, AC004694, AC006084, Z73417, AC005881, AC011311, U80017, AC005386.

	HNECO69	3714	861068	1 - 154	15 - 168	A0991512, AC006059, AC004148, AC003982, AL024498, Z83844, A1003147, AC000026, AL008719, Z95023, AC002247, AL096701, AC005071, Z68164, AC007276, AC006088,
	HNECQ69	3714	861068	1 - 154	15 - 168	AL008715, AC005244, AL022476, AL049869, and AL049712.
	HNECR93	3715	529868	1 - 287	15 - 301	AC004974.
	HNECS77	3716	527511	1 - 487	15 - 501	A1907658, and AW176803.
	HNECT70	3717	988356	1 - 289	15 - 303	
	HNECV31	3718	466977	1 - 290	15 - 304	
	HNECV66	3719	575633	1 - 322	15 - 336	
	HNECW09	3720	968378	1 - 482	15 - 496	
	HNECW20	3721	527508	1 - 493	15 - 507	AC004034, and AC004235.
	HNECW35	3722	855430	1 - 409	15 - 423	AC008928.
	HNECX77	3723	507305	1 - 350	15 - 364	AW407366, and AA278963.
	HNEDD27	3724	527589	1 - 377	15 - 391	W60940, AR019563, and AD000833.
	HNEDD80	3725	507186	1 - 399	15 - 413	AD004797.
	HNEDD90	3726	789187	1 - 351	15 - 365	AI692616, AL080276, AC004829, AL021921, and U95738.
	HNEDE48	3727	721895	1 - 265	15 - 279	
	HNEDE59	3728	527060	1 - 264	15 - 278	
	HNEDF71	3729	572390	1 - 120	15 - 134	
	HNEDG11	3730	967643	1 - 243	15 - 257	
	HNEDG35	3731	790570	1 - 540	15 - 554	AD000864.
	HNEDG56	3732	746708	1 - 325	15 - 339	
	HNEDH54	3733	527505	1 - 318	15 - 332	
	HNEDH96	3734	697747	1 - 678	15 - 692	
	HNEDI80	3735	573138	1 - 353	15 - 367	AC003306.
	HNEDK04	3736	523910	1 - 139	15 - 153	AA299550, AC000159, and AR007864.
	HNEDK16	3737	702570	1 - 433	15 - 447	AA299540, AW363833, AC000159, and AB007864.
	HNEDK22	3738	527503	1 - 365	15 - 379	
	HNEDK74	3739	763880	1 - 225	15 - 239	
	HNEDNA2	3740	527499	1 - 179	15 - 193	AC003222.
	HNEDO95	3741	573136	1 - 258	15 - 272	
	HNEOQS1	3742	527816	1 - 321	15 - 335	
	HNEOQH8	3743	586485	1 - 1038	15 - 1052	AA525825, AA868356, AVI05002, and AW022273.
	HNEDR48	3744	683470	1 - 153	15 - 167	
	HNEDS03	3745	925091	1 - 113	15 - 127	
	HNEOS18	3746	954586	1 - 140	15 - 154	

HNEED29	3747	703032	1 - 221	15 - 235	
HNEED01	3748	909832	1 - 403	15 - 417	
HNEEA41	3749	868102	1 - 264	15 - 278	
HNEEB62	3750	573185	1 - 441	15 - 455	
HNEEB84	3751	781940	1 - 211	15 - 225	AL133037.
HNEEC81	3752	844318	1 - 352	15 - 366	AL031729.
HNEED12	3753	893698	1 - 583	15 - 597	<p>AL284640, AL246796, AL133164, AL434695, AL564185, AL431303, AL119984, AL334443, AL286356, AL053672, AL471481, AL754955, AL408717, AL207002, AL488746, AL491814, AL587583, AL587565, AL602557, AL119699, AL00167, AL041706, AL62049, AL301350, AL029531, AL499938, AL281881, AL303196, AL440299, AL274349, AL079645, AL537955, AL569086, AL041146, AL191265, AL037897, AL171941, AL753037, AL064864, AL79504, AL366902, AL008317, AL064729, AL680243, AL192631, AL038842, AL177061, AL371070, AL046898, AL713815, AL633025, AL446464, AL502155, AL761471, AL732120, AL632648, AL226153, AL674873, AL587256, AL446464, AL502155, AL761471, AL732120, AL632648, AL334435, ALF50152, AL962050, AL143242, AL339850, AL270027, AL238278, AL251021, AL507547, AL022279, AL7168342, AL362573, AL138265, AL679782, AL272738, AL871722, AL120687, AL714453, AL359290, AL567674, AL079910, AL270476, AL581903, ALW007759, AL038474, AL120959, AL273218, AL386111, AL302963, AL77858, AL434311, AL045053, AL830390, AL177063, AL801701, AL654525, AL039958, AL928898, AL107160, AL754653, AL708678, AL073470, AL631507, AL046205, AL569387, AL358571, AL367975, AL473943, AL005594, AL005393, AL009516, AL005940, AL005338, AL006263, AL007727, AL031311, AL005529, AL006277, AL006241, L44140, AL003003, AL005666, AL004491, AL007099, AL135744, AL033392, AL009961, AL005231, AL005778, AL006536, AL133448, ALP00501, AL132994, AL005799, AL022323, AL035494, AL008721, ALP00152, AL049843, ALF06779, AL008718, AL84394, AL004472, AL005105, AL006088, AL002429, AL132777, AL004596, AL005046, AL008039, AL005701, ALF196969, AL117258, AL008582, AL004492, AL0023581, AL005895, AL004492, AL005387, AL002126, AL005154, AL005971, ALP067844, AL002996, AL006285, AL0096707, ALP00049, AL0005562, AL003681, AL005740, AL031770, AL002404, AL049539, ALP00311, AL005839, AL080274, AL002312, AL049776, AL021391, AL005180, ALP01550, AL003914, AL000047, AL022322, AL021453, AL031597, AL005696, AL008125, AL132987, AL004158, ALP00555, AL005244, AL109628, AL016025, AL006649, AL005212, AL004650, AL003101, AL007066, AL031650, AL006666, AL004386, AL27054, AL002425, AL031668, AL006017, AL020663, ALP00509, AL004825, AL006048, AL008004, AL006120, AL004690, AL005531, AL005828, AL003085, AL006138, AL004263, AL031848, AL008055, AL004253, AL85195, AL91326, AL133512, AL006128, AL004652, AL005412, AL007649,</p>

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HNEED48	3754	668747	1 - 563	15 - 577
HNFAA13	3755	667712	1 - 460	15 - 474
HNFAA80	3756	781578	1 - 398	15 - 412
HNFAA83	3757	530295	1 - 299	15 - 313
HNFAAD95	3758	784714	1 - 726	15 - 740
HNFAE07	3759	861069	1 - 347	15 - 361
HNFAF40	3760	861021	1 - 305	15 - 319
HNFAAG69	3761	530349	1 - 163	15 - 177
HNFAH45	3762	662053	1 - 370	15 - 384
HNFBBS1	3763	530064	1 - 206	15 - 220
HNFBT11	3764	967784	1 - 218	15 - 232
				C05828, AW363343, C05733, W48575, AA581240, AL299442, AL871940, AA121886, AL869406, AL133355, AL133609, AA360082, AL015119, N32218, AL669165, AL828488, AL209438, AL611960, AL583255, AL884667, AL883595, C05928, AL601356, AC006057, AC003518, AC000815, AL133243, AL096703, AC005179, AC005666, AC007919, AC007066, AL049697, AC002044, AC007016, AC002094, AC007385, AC007051, AC007395, AP000306, AC004019, AC005622, AL035087, AC005484, AC005484, AC004963, AF217403, AD000812, AC002126, AC005251, AC002357, AL034548, AC006571, AC004755, Z97876, AL031123, Z84488, AL117339, AC004447, AC008372, AC002565, AP000047, AC004659, AC006011, AC005409, AC005412, AC006479, AC004049, AP000557, AC005838, U91328, U95742, AP000115, AC005003, AL049749, AC005231, AL035405, AC009399, AC003071, AC003072, AL109952, AC004913, AC004655, AF047825, AC005358, AC007308, AC004382, AL031075, AL031120,

HNFB53	3765	861015	1-347	15-361	AC005304, Z98257, AC004924, AC004099, AC005913, AC007367, AR036572, AC006120, AC004582, AP000359, AC005095, AC005911, AC007376, AL109827, AC005803, AC004854, AP000501, AC006511, AL022776, AC003049, AC004517, AC005829, U96629, AC005255, AL022315, Z83732, AC004929, AC004622, D84394, AC007216, AC009247, AC003065, AC004837, AL117338, and AP0053336.
HNFC132	3766	699706	1-124	15-138	
HNFC141	3767	861014	1-723	15-737	AC004126.
HNFC177	3768	761390	1-428	15-442	F15202, AA297666, AA621381, AA713814, A1244157, AC002468, A1006997, AC004099, AC007774, AL024507, AL034417, AL049829, AP000194, AC005844, AC006341, AL133245, AC004953, AL133246, AC005730, AC004019, AL121652, AC006387, AC007994, AC006441, U85195, Z98304, AE000683, AL133244, AC002456, AL139054, AL022323, AL035420, AP000116, AC000052, AC004531, AC004967, AC005231, AL020997, AC005668, AC002365, AP000313, U91326, Z83844, AP000117, AC007055, AP000030, AL096701, AC004453, AC004209, AL109984, AC007227, AC005037, AL031228, AC006371, AC004383, AL031186, AP000689, AC004626, U91323, AF134726, AC005264, U96629, AB003151, AF196779, Z82198, AC005914, AC004686, and AP000501.
HNFC168	3769	585328	1-108	15-122	AL022098.
HNFC504	3770	977836	1-405	15-419	AA743885, AA714682, AA748749, AA047509, AA969497, and AA649294.
HNFC727	3771	529964	1-397	15-411	AL079300.
HNFC167	3772	927833	1-217	15-231	
HNFCW14	3773	955293	1-367	15-381	AC002091.
HNFCY33	3774	861005	1-485	15-499	
HNFC21	3775	529867	1-298	15-312	
HNFC91	3776	496241	1-503	15-517	
HNFD117	3777	960239	1-451	15-465	H67844, and AL031282.
HNFDK40	3778	854017	1-475	15-489	AC006441.
HNFDN04	3779	573717	1-450	15-464	N24949, and N21519.
HNFDN41	3780	712571	1-375	15-389	Z98884.
HNFDN89	3781	787085	1-173	15-187	AC006285, AC007845, and AC016025.
HNFD081	3782	573741	1-256	15-270	
HNFD084	3783	575347	1-425	15-439	AA651846, AA287087, AC007193, AL008721, AC007228, and AC007283.
HNFD099	3784	719215	1-374	15-388	AC007308, AP000557, AP000556, and AC004983.
HNFD355	3785	527500	1-208	15-222	AL008729.
HNFD383	3786	537343	1-264	15-278	
HNFDV41	3787	537337	1-407	15-421	



HNFE022	3788	537334	1 - 103	15 - 117	AI692459, AW025274, AI912748, AI625788, AW135287, AI268722, AW137005, AI983277, AW235753, AD000864, and AC002133.
HNFE043	3789	583458	1 - 703	15 - 717	AA248418, AC009955, R98152, AA031428, AA592915, AI732656, AI904111, AC002485, AC004897, AI021786, AC004935, AC004015, AC003682, AI035089, AC006145, AC008168, AC005533, AC008014, AC002357, AI049613, Z68331, AP000403, AI031782, AI035424, AI049734, and AC003378.
HNFE043	3790	424792	1 - 331	15 - 345	
HNFE083	3791	850982	1 - 502	15 - 516	
HNFE095	3792	971171	1 - 814	15 - 828	
HNFE009	3793	526641	1 - 265	15 - 279	
HNFE031	3794	934595	1 - 384	15 - 398	AA490873.
HNFE012	3795	825406	1 - 134	15 - 148	AF196970, and AF115549.
HNFE012	3796	518245	1 - 95	15 - 109	
HNFE033	3797	957396	1 - 516	15 - 530	
HNFE076	3798	860967	1 - 426	15 - 440	AW340916, AA766845, I.81825, and AC004749.
HNFE086	3799	537336	1 - 234	15 - 248	
HNFE020	3800	669916	1 - 463	15 - 477	
HNFE061	3801	530355	1 - 232	15 - 246	AA7777291, AI476328, AC004409, AC004825, AC004081, Z98742, AC004207, AP000515, and AB014083.
HNFE089	3802	787086	1 - 361	15 - 375	
HNFE044	3803	860920	1 - 350	15 - 364	
HNFE062	3804	574598	1 - 74	15 - 88	AC004914.
HNFE041	3805	575549	1 - 207	15 - 221	AI954737.
HNFE066	3806	575552	1 - 99	15 - 113	
HNFE021	3807	671263	1 - 425	15 - 439	
HNFE021	3808	574693	1 - 401	15 - 415	
HNFE088	3809	577422	1 - 331	15 - 345	
HNFE081	3810	574678	1 - 55	15 - 69	
HNFE073	3811	781693	1 - 178	15 - 192	
HNFE003	3812	921923	1 - 461	15 - 475	
HNFE044	3813	574679	1 - 266	15 - 280	
HNFE048	3814	860311	1 - 379	15 - 393	
					AI043721, F24284, AI043756, AI561335, AI880168, AI697353, AA715270, W25284, AI865905, AI120008, T62712, AW169397, AI133723, AI914706, AA669416, AW238278, AI305547, AI307201, T11542, AA548137, AI473090, R65801, AI371070, AI138344, AW055226, AW088846, AA019707, AW238016, AI205181, AI118991, AA669961, AI082510, AI291823, AI312790, AI039809, AI336054, AI689385, AI355587, AA580662, AW327961, AW327960.

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HNFFK15	3815	920748	1 - 194	15 - 208	AC007283.
HNFFK36	3816	529978	1 - 303	15 - 317	
HNFFK61	3817	740644	1 - 351	15 - 365	
HNFFM25	3818	705856	1 - 798	15 - 812	AA489127, AA279641, AC004883, AF184614, U57835, U61240, U61244, U69072, Z95331, AC005529, AC006026, AL008726, AL031985, AC000353, AC004876, AC005082, AL023882, U85195, and AC005327.

					AL35531, N92553, AA366768, AA349208, H04088, W42753, AL62566, AA488175, H21988, AA364212, AA313213, AL372422, AA974799, R48548, W67185, R79976, AA380728, AL611852, N42220, H19508, AW381755, AA455790, R24504, AA890444, R71813, R35880, R35881, R90881, R85186, H74174, AA323925, AA188900, AA350334, A910306, H67210, AA317877, AL372424, R71760, R48639, W86716, W42696, AA322360, H30234, AB023051, AP000512, AC006165, AF117234, AF085357, AF089750, AF145044, U60976, U60977, and U90435.
					AL631960.
HNF061	3819	742049	1 - 329	15 - 343	AA659360, AA689255, AA862243, AW338370, AA773162, AL120343, AA167792, AA833896, AA833875, AA494263, AA503119, AA3594072, AP10608, AD950671, AA568494, AL174535, AW002777, AA608612, AT733836, AA828062, F15883, AT754653, AW082076, AA179219, AA608588, AL114827, AA251356, AL581486, AA631933, AW070703, AL601229, AA355083, AL300167, AL306232, AA480792, N71033, AW118304, AA188664, AA847096, AL120227, AA826302, N33867, AW402688, AL500453, AL537041, AA678565, AA635368, AL362415, AL364809, AL134608, AA613624, AA338167, AA492105, AA984114, AA811208, N84446, AA640410, AA640430, AA358515, AD245679, AD54354, AA489766, AA613954, AW167374, AA522642, AL924855, AA499954, AL865196, W033818, AA689285, AL583466, AD251576, AL038971, AA843779, R08918, AW274191, R44855, AW150476, AA421078, AL409588, AA054055, AL708005, AA366458, AW195988, AL134519, AA381247, F28352, H67863, AW001268, AA808186, AL469599, AA354259, AL088162, AL536625, AD23700, AW265244, AA654661, AL133332, AT745335, AB357551, AW265009, AL597580, AA745373, AA503298, AA594043, AL610737, AL042927, AA780784, AA071393, AA677671, AL040051, AL188390, AL282793, T07769, AL041894, AA904211, H18914, AA972809, AA984171, AA340602, AL270370, AA679194, N22037, AL253382, AW265186, AL042225, AL135352, AL978718, AL054414, AP914879, AC002331, Z92542, AC004020, AL035685, AC005722, AL021154, AL133445, AC005570, AC007546, AC004216, AL031734, AC005701, AC005510, AL079305, AC004253, AC007590, AC007746, AC009589, Z78421, AB026898, AL035106, Z98886, AC002558, AC005071, Z85996, AC0089721, AC005670, AL034376, AF001548, AC004976, AC005747, AL079333, Z82198, Z85987, AC003101, Z97533, AC004000, AL035652, AC005279, AC005751, AC005317, AP000260, AL034375, Z98941, AL049760, AL109754, AL035348, AL035400, AL049691, AP000499, AC005091, AL008709, AC007278, Z87193, D83729, Z99756, AP000099, AL024508, AF015262, AC002070, AL729043, AC007879, AP000146, AC002351, AL035694, AL034371, AC006549, AC006960, AL031280, AP000036, AC006925, AC006695, AC006241, AF130248, AL035658, AL031294, AC007159, AC005192, AL031055, AL021528, AC007221, AC003664, AC005668, L78810, AL009029, AC010206, AC006571, AL049759, AP001051, AC004912, Z97196, AL022324, AC003667, AC005026, AC006043, AC008119, Z97192, AC004884, AC005296, AC006315, AC010077, AL035251, AC009225, AC007514,
HNF076	3820	727306	1 - 323	15 - 337	
HNF005	3821	860851	1 - 406	15 - 420	

					AC005873, AL035587, AL023453, AC004125, AC006080, AL008712, AL049773, Z75741, AC008125, AL049712, AL034400, AL078384, AC004089, AC005029, AC006333, AC004865, AC007682, AL022394, AC007738, U91319, AC003958, AF111167, AL049792, AC007277, AL031117, AC005796, AC004673, AL031673, D16583, AL022334, AC005291, AC003771, AL079301, AC002302, AL133500, AC003086, AL022159, AC007540, AC008041, AL229042, AL031778, AC007664, AC002551, AC006560, AP000469, AC018767, AC003663, AC004526, AC007240, AC003689, AC007559, AC008040, AL022312, AL031665, AC006126, AC007774, AL049829, AL008770, AC005900, AC007773, AL132800, AC002054, AC002472, AL050336, AL080245, AL020866, AC006977, Z98749, AL022337, AL050333, AC006132, AL031666, AC006503, AF134726, AC002407, AL031293, AC004538, AL031595, AC006984, AC005363, AP000503, AF134726, AC005215, AF000223, AC005099, AC004106, AC002460, AL121578, AP000069, AP000502, AL133244, AC006020, AC005746, AC008101, AC006384, AL031466, AC005243, AC006088, AC010200, AC005224, AC006972, AL023882, AC016830, AC004810, Z95115, AL035690, AC007539, AF048729, AL031277, AL133247, AC005041, AC006323, AL035425, AC007649, AC004953, AP000076, AC000088, AC000082, AC000771, AC004905, AC005725, AL079303, AC005018, AC003969, Z98949, AL135744, AP000032, and AC005412.
HNFFR46	3822	574618	1 - 149	15 - 163	M89651
HNFFS14	3823	558192	1 - 296	15 - 310	AC004782
HNFFS23	3824	574677	1 - 300	15 - 314	AL078644
HNFFS46	3825	574669	1 - 294	15 - 308	
HNFFS96	3826	860904	1 - 88	15 - 102	
HNFFT30	3827	574616	1 - 425	15 - 439	AA345805, AB007864, and AC000159.
HNFFT62	3828	574623	1 - 390	15 - 404	
HNFFT71	3829	574617	1 - 445	15 - 459	
HNFFT83	3830	506711	1 - 443	15 - 459	Z82215
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HNFFV66	3832	574153	1 - 309	15 - 323	
HNFFV73	3833	574143	1 - 347	15 - 361	

HNPFEX21	3834	574217	1 - 393	15 - 407	AA632593, AA612727, AI801505, AA838091, W02419, AA584862, AL049845, AI871667, AA947352, AA610255, AL121287, AA857812, R79235, AA829036, N95156, AI282629, AI243789, AI870453, AW070532, AA493789, AA054156, W02749, AI285493, AA558748, AA715173, AA715075, AI216990, AA275406, AW272294, AA715955, F35374, AA302690, AI587467, AW023111, R93919, AC002430, AC007384, AC005484, AC004477, AF196779, AC006581, AC005920, AI199628, AC005722, AF001530, AF129756, AC004000, AC005694, AC004263, AP000034, AL049869, Y18000, AC005527, AC003119, Z95115, AC005071, AC004955, AC005529, Z98749, AC007934, AC007546, AC006026, Z82190, AL133382, AL109827, AL133246, Z97832, AP000501, AC005317, AC005412, AL050318, AL109758, AL133312, AC003108, AL024498, AC006992, AC005538, AF111167, AC005237, AC002310, AC004878, AC002996, AC005988, AC002470, AP000131, AP000209, AL031291, AL022336, AC007225, AC004517, AC004232, AC004953, AC004148, AC005231, AC002301, AC006946, AC004890, AC006121, AP000248, L78810, AL1139054, AC008154, AC006449, AI109627, AC006071, AC003046, AC004216, AC006430, AC005821, AF109907, Z83840, AC005049, AP000552, AC005736, AC008372, AF207550, AC005746, X54486, Z98200, AC005740, AL033521, Z98884, AC004230, AL008725, AC007450, AP000505, AF030453, AC007114, AC006001, AP000703, AL020993, AL035413, AC005088, AL009181, AC005225, AL024474, AC005690, AC005971, Z97053, AC000025, AC006208, AL009179, AC007371, AL034553, U89335, AC007024, AC005695, AC004242, AC007690, AC004896, AC005316, AC004973, AL031767, AF124523, AC007664, AC002545, AC007421, AC003004, AC005034, AC004832, AL109952, AC007283, AC007357, AL031311, AC020663, AL023553, AC006017, AL0049843, AC004099, AF047825, AL035405, AC002551, AC006511, AC006312, AF141309, AL004139, AC004383, AC005702, AL031431, AC004686, AC005921, AL080317, Y14768, AC005519, AL031665, Z84469, AC002302, AB023050, AC005377, AC004131, AL021391, AL049795, Z99291, AL031680, AF200465, AC005037, AL133353, AC004236, AP000101, AC003029, AC005841, AC006211, Z97054, AC009275, AC007227, AL135744, Z82243, AC004802, AL022069, AC002553, AF196969, AC006141, AC007686, AC006515, AL078639, AC005004, Z95114, AC005089, AF031078, AL031664, X54156, U94788, AL049229, AC007899, AC006057, AC010170, AL035249, AC003982, AC007011, Z68273, AC004757, AC007237, AL020997, AP000511, AF030876, AI009610, AL049631, AL031597, AC005768, AL117694, AL035443, AL031005, U91323, Z98304, AP000116, AC009294, AL049776, AC002387, AC002350, U62293, AC005057, AL0016025, Z98050, AL033521, AL031729, Z83844, AC007021, AL035685, AL021997, and Z75407.
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					AC005610.
					AA442241.
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HNPFEX79	3836	574152	1 - 358	15 - 372	
HNPFZ53	3837	526845	1 - 431	15 - 445	
HNPFZ89	3838	913701	1 - 987	15 - 1001	

HNFFZ91	3839	860897	1 - 758	15 - 772	AAS6866, AB21765, AA636077, AA828619, AL038842, AA807704, AL049999, AA720732, AA297776, AW243793, AA632765, AA515728, AL079734, AL039257, AW327624, AA773171, AA578431, AL066232, AL251576, AA502991, AL782151, AL282253, AL583466, AA181917, AL433952, AL090377, AL357823, AL101744, AA832175, AL336771, AL285493, AL801505, AA729904, AA284247, AL133448, AL121655, Z84474, AC005786, AC007371, AP000556, AC002984, AC005602, Z83822, AC005512, AF196779, AL035464, AF207550, AP000557, AC005303, AC005209, AC003041, AC004148, L44140, AC005003, AC002365, AC004703, AC035079, AC005972, AC004921, AC006441, AC005412, Z68331, AC004067, AC005579, AC005015, Z83840, X57103, AL078611, AP000030, AL049611, AC005527, Z83844, AL035414, AC005619, AL109628, AC007688, AP000692, AL024498, AC009247, AL139054, AC005519, AL034420, AL102097, Z99127, AC003387, AC002538, AC006057, AC006312, AL109984, AC004263, AL031326, AC005089, AL050318, AC006101, AL133246, Z97034, AC003103, AC004816, AL031005, AC004616, X55448, U78027, AC006538, AC005004, AC007686, AC005180, AC007461, AC007226, AL022320, AL022315, AC006512, AP000049, AL096701, Z99716, AL078476, AL102095, AC006064, AC004678, AC005182, AL050321, AL031587, AC000025, AL024507, AC007421, AL080243, AC002366, AL049839, AC005369, AC006621, AC004967, AC006360, U91327, AL035422, AF205588, AC005971, AP000311, AC008044, AC004383, AC002544, Z95113, AL132712, AF109907, AC005914, AC007690, AC008372, AL022721, AC004034, AF165926, AC005158, Z83845, AC004812, AC009516, AC006285, AC005065, AC004643, AL121652, AP000114, AP000046, AC003533, AP000549, U62317, AC006208, AC004797, AL031003, AL006345, AC016830, AC004673, AC007664, AC004257, AC004821, AC002483, AC007263, AC006474, AL049757, AC016025, U47924, AL022316, AC007510, AC004584, AC005666, AL121603, Z98051, Z84480, AL049795, AC004876, AL031121, AC002472, AC004887, AC005071, AC007384, AL021808, AC006261, AC007051, AC008039, AL031276, AC005684, AL049694, AF030876, AC006487, AF107885, AC004955, AC005355, AC006273, AC006088, AL096703, AF003483, AF053356, AL031657, AC004386, AC005011, AL031722, AF217403, AL117330, U91323, AL020993, AC005822, AL031846, AC005695, AC005231, AL031346, AC006241, Z98200, AC007227, AC004854, AC005920, AC002094, AC006166, AC004150, AC002310, AC005778, AP000552, AP000665, Z86090, AB001523, AL034429, AL031680, AC003108, AC004033, AL034548, U80017, AC005355, AC005482, AC005183, AC003010, AL122020, AL021939, AC006084, AC005037, U96629, and U52112.
HNFGB37	3840	577342	1 - 292	15 - 306	Z95118.
	HNFGC17	3841	860899	1 - 435	
	HNFGC46	3842	967538	1 - 309	AA639859.
	HNFGC53	3843	860900	1 - 615	AA702690, AL570659, H58517, and AC005318.
HNFGC57	3844	782183	1 - 427	15 - 441	

HNFGC64	3845	851981	1 - 440	15 - 454	
HNFGB16	3846	781720	1 - 303	15 - 317	
HNFGB36	3847	684992	1 - 586	15 - 580	
HNFGF83	3848	526843	1 - 349	15 - 363	
HNFGH24	3849	524419	1 - 328	15 - 342	
HNFGH71	3850	954601	1 - 404	15 - 418	
HNFGI01	3851	921431	1 - 660	15 - 674	
HNFGI49	3852	909707	1 - 285	15 - 299	
HNFGI84	3853	763204	1 - 248	15 - 262	
HNFGI93	3854	526534	1 - 283	15 - 297	
HNFGK28	3855	574593	1 - 321	15 - 335	
HNFGK29	3856	574599	1 - 221	15 - 235	

HNFGK39	3857	574592	1 - 225	15 - 239	AL031005.
HNFGJ31	3858	420241	1 - 469	15 - 483	
HNFGI94	3859	709264	1 - 138	15 - 152	AC005071.
HNFGN40	3860	524398	1 - 357	15 - 371	AT758365, R25772, A1199589, AA065339, AW410939, AA101566, A1828038, A1743331, AW294803, AD90537, A1907224, A1990873, A1636883, A1907223, AA781736, and A1479878.
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HNFGM76	3862	908665	1 - 868	15 - 882	A1860139, A1738678, AW149459, A1943379, A1490859, A1879584, A1475610, A1094142, A1057183, AW051629, AW136472, AW293272, A1886866, A1825816, A4236872, A1189241, AA927552, A1084187, AW250159, R71853, A1523638, AFI50628, and AFI32599.
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HNFGN60	3864	574588	1 - 322	15 - 336	Z59518.
HNFGP07	3865	953915	1 - 522	15 - 536	
HNFGP31	3866	574643	1 - 113	15 - 127	AL135009, and AF053630.
HNFGP64	3867	932413	1 - 719	15 - 733	AW117576, AA648940, AA814664, and AA749041.
HNFGQ23	3868	750597	1 - 370	15 - 384	AL035530.
HNFGQ58	3869	574583	1 - 300	15 - 314	
HNFGU56	3870	574587	1 - 353	15 - 367	
HNFGW96	3871	915309	1 - 753	15 - 767	H24136, R25934, Z45244, and A1214671.
HNFGX55	3872	795918	1 - 722	15 - 736	T89765, and T84142.
HNFGZ03	3873	924695	1 - 486	15 - 500	AT765111, and AC006953.
HNFH11	3874	967520	1 - 436	15 - 450	
HNFDH40	3875	707875	1 - 468	15 - 482	
HNFIH18	3876	666827	1 - 300	15 - 314	
HNFIH32	3877	699518	1 - 310	15 - 324	
HNFIH38	3878	574146	1 - 397	15 - 411	
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HNFIH63	3880	574684	1 - 222	15 - 236	AL034375, and AC002326.
HNFIH12	3881	968808	1 - 250	15 - 264	
HNFIH31	3882	574697	1 - 304	15 - 318	
HNFIH33	3883	574703	1 - 348	15 - 362	
HNFIH83	3884	523646	1 - 299	15 - 313	
HNFIH88	3885	521932	1 - 116	15 - 130	M62505, AC003007, and AC005632.
HNFIH17	3886	523569	1 - 214	15 - 228	
HNFIH10	3887	964802	1 - 340	15 - 354	AC006953.



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HNFS84	3902	725666	1 - 433	15 - 447	
HNFS85	3903	576118	1 - 299	15 - 313	
HNHFU20	3904	512927	1 - 743	15 - 757	M79201
HNHFU27	3905	683506	1 - 320	15 - 334	AA281626, AA626747, AA744220, AW406447, A1281903, AA736472, AA652057, AA649642, AA598977, AA125788, AA095511, AW088038, AW074207, AA947370, AL042420, AL571512, TU7324, AA553604, A1296694, AA836275, AA494163, AA151807, AA831388, AA338522, AW448507, A1281881, AC011311, AC006581, Z95329, AC004526, AL135744, AC004963, AL021707, AP000500, AC005303, AC002090, AF055066, AP001137, AF196971, AF067844, AC005703, Z99570, AC008179, AC004858, AL049869, AF130343, Z72522, AL021878, AF205588, AC004531, AC005994, L29074, AC007050, AC006026, AC006213, AL121603, AL133238, AF109907, AF053356, AL096701, Z69921, AC004991, AC016025, AC004647, AC006356, AC016026, AL034402, AC005971, ZP000348, Z82184, AC006071, Z85986, AC000052, U44395, AP000552, AF087510, AC005531, AF049893, AL031584, AL033521, AC006285, AC004765, AB026899, AC007845, AC007066, AL121638, AC020663, AC005102, Z53023, Z80017, AL031257, AC004041, AL121877, AL022323, AP000133, AP000012, L48473, Z83820, U98008, AC006313, AL031589, AT246003, AC003029, AC002310, AC004033, AF165926, U50429, AL035071, AL022322, AL049759, AC003684, AC006312, AC006064, AC002425, AP000556, AC007919, AL080243, and AL031431.
HNHFU85	3906	506309	1 - 364	15 - 378	AL138162, and AC004490.
HNHFV81	3907	766220	1 - 396	15 - 410	AA186965, R74512, Z42358, and A1904695.
HNFW14	3908	939763	1 - 522	15 - 536	
HNFW40	3909	577110	1 - 302	15 - 316	W21388, D89870, AC004152, and Z58159.
HNFW70	3910	757261	1 - 303	15 - 317	AA228901, T89776, T71470, and Z83844.
HNFW81	3911	577329	1 - 394	15 - 408	
HNFX24	3912	934305	1 - 627	15 - 641	AA682722, AA579680, AA995482, and H60525.
HNFX44	3913	716852	1 - 279	15 - 293	AF072099, and AC008984.
HNFX29	3914	860879	1 - 569	15 - 583	
HNFA33	3915	861010	1 - 280	15 - 294	AB017919.
HNFB47	3916	523438	1 - 305	15 - 319	AC007032.
HNFB67	3917	577326	1 - 111	15 - 125	
HNFC22	3918	577442	1 - 345	15 - 359	AL031283.
HNFC43	3919	707264	1 - 371	15 - 385	AW276703, and AC005280.
HNFE18	3920	576032	1 - 212	15 - 226	AC005095.
HNFI07	3921	918389	1 - 465	15 - 479	AC002091, AR026676, AC003695, Y10742, and AR026672.
HNFI79	3922	576143	1 - 251	15 - 265	AO88952.
HNFI46	3923	919275	1 - 579	15 - 593	

HNFIK03	3924	921051	1 - 276	15 - 290	AL049553.
	3925	576151	1 - 223	15 - 237	
HNFIK37	3926	657201	1 - 421	15 - 435	T47739, N27353, AA084070, F35659, AL120343, AL051436, AL131166, AL048925, AC005015, AL035587, AL022237, AL031584, AP001035, AL096712, Z82214, AC003959, AC005519, AC007738, AL031296, AC001231, AL121603, AL109654, AL049776, AC000134, Z98752, AP000151, AC006965, AL096766, AC006984, AC005011, AC010849, AL049837, AC002059, AP000513, AL109984, AL035422, AC004596, AL021392, AC007387, AL023050, N96326, AC004799, Z82179, AL035450, AC005414, Z94865, AC005542, AL049836, AC008967, AC011422, AC006354, AC002350, AP000555, AC005822, AC003080, AC007652, AL096774, AP00080, AL122020, AC005988, Z97055, AC008134, AP00018, AP000692, AC004821, AL109620, AC007993, AP000159, AC005081, AL022160, AC004144, U91319, X14448, AC005354, AC005003, U78027, AC005608, AC007285, and AL049757.
HNFIK44	3926	506258	1 - 425	15 - 439	AC004149, and AL049759.
	3927	657201	1 - 421	15 - 435	
HNFIK13	3927	657201	1 - 421	15 - 435	AL035865, AL038564, and AC004687.
	3928	661500	1 - 259	15 - 273	
HNFIK16	3928	661500	1 - 259	15 - 273	AC004001.
	3929	702415	1 - 431	15 - 445	
HNFIK33	3929	702415	1 - 431	15 - 445	I44517.
	3930	740372	1 - 429	15 - 443	
HNFIK60	3930	740372	1 - 429	15 - 443	
	3931	574569	1 - 551	15 - 565	
HNFIK67	3931	574569	1 - 551	15 - 565	
	3932	779925	1 - 456	15 - 470	
HNFIK23	3932	779925	1 - 456	15 - 470	
	3933	573095	1 - 447	15 - 461	
HNFI027	3933	573095	1 - 447	15 - 461	
	3934	724374	1 - 449	15 - 463	
HNFI080	3934	724374	1 - 449	15 - 463	AB007864, and AC000159.
	3935	921037	1 - 196	15 - 210	
HNFI082	3935	921037	1 - 196	15 - 210	AL033668, AL880750, AL911931, AL418465, AL762839, AL659971, AL479026, AL096759, AL033897, AL401511, AL871470, AL884848, AL814201, AW406595, AL431497, AL401210, AA293370, W75960, AA744801, AL127571, AL817886, AW405264, AL684858, W72885, AW026235, AL394414, AL224469, AA292652, AW404229, AA284412, AA766620, AW026968, AW026962, AL360930, AL3350073, AL332950, AA633494, AW406935, AW407230, AA535630, AW407951, AL243522, AA929024, AA768971, AW405242, AA744794, AL760712, AW408225, AL000428, AW296233, AL091955, AL323558, R88002, AA744457, AA744459, N75335, AA716083, AL352405, AA744029, AA507894, AL280941, AL811203, AL146957, AL047763, AL688466, AL400239, AL040243, AL400832, AL499463, AL249257, AW301409, AL800433, AW087445, AL293055, AL121270, AL349772, AL539771, AL538716, AL800453, AL046849, AL275175, AL043326, AL064830, AL433976, AL620284, AL625079, AL702433, AL045500, AL433157, AL500659, AW238730, AL250293, AL702406, AL567351, AL119791, AL349933, AW117882, AL281773, AW071349, AL649811, AW195957, AL613017, AL699131, AL439087, AL568855, AL678302, AL631107, AL568870, AL224992, AL121365, AL266966, AL686831, AL633419, AL498579, AL866602, AL36456, AW274192, AL610645, AW407493, AL521012, AL349004, AL349598, AL580190, AL407042, AL866608, AL349645, AL348897, AL119748,
HNFIK37	3935	921037	1 - 196	15 - 210	AL033668, AL880750, AL911931, AL418465, AL762839, AL659971, AL479026, AL096759, AL033897, AL401511, AL871470, AL884848, AL814201, AW406595, AL431497, AL401210, AA293370, W75960, AA744801, AL127571, AL817886, AW405264, AL684858, W72885, AW026235, AL394414, AL224469, AA292652, AW404229, AA284412, AA766620, AW026968, AW026962, AL360930, AL3350073, AL332950, AA633494, AW406935, AW407230, AA535630, AW407951, AL243522, AA929024, AA768971, AW405242, AA744794, AL760712, AW408225, AL000428, AW296233, AL091955, AL323558, R88002, AA744457, AA744459, N75335, AA716083, AL352405, AA744029, AA507894, AL280941, AL811203, AL146957, AL047763, AL688466, AL400239, AL040243, AL400832, AL499463, AL249257, AW301409, AL800433, AW087445, AL293055, AL121270, AL349772, AL539771, AL538716, AL800453, AL046849, AL275175, AL043326, AL064830, AL433976, AL620284, AL625079, AL702433, AL045500, AL433157, AL500659, AW238730, AL250293, AL702406, AL567351, AL119791, AL349933, AW117882, AL281773, AW071349, AL649811, AW195957, AL613017, AL699131, AL439087, AL568855, AL678302, AL631107, AL568870, AL224992, AL121365, AL266966, AL686831, AL633419, AL498579, AL866602, AL36456, AW274192, AL610645, AW407493, AL521012, AL349004, AL349598, AL580190, AL407042, AL866608, AL349645, AL348897, AL119748,
	3936	965283	1 - 1489	15 - 1503	

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HNFIU24	3947	677178	1 - 380	15 - 394	AC002091, and AC003695.
HNFIU56	3948	733363	1 - 402	15 - 416	AP000356.
HNFIU38	3949	709265	1 - 374	15 - 388	AW300249.
HNFIU73	3950	704409	1 - 350	15 - 364	AW381960, AA856911, AA533315, AW382006, AL79467, AL679002, AC007993, AC004859, AL031659, AL049636, U82668, AC005015, AC007221, AL050307, AC006430, AC005048, AC002091, U07562, AC005355, AP000080, AL024509, AL034345, AD000091, AC004817, AC010206, AC008119, Z82244, and AC022517.
HNFIU62	3951	740598	1 - 380	15 - 394	B54654, AA508689, R10145, AL360932, AL161218, AL302363, AL169798, N46098, AW72622, AA284554, AC007382, AL003587, AC004963, AL049839, AL049869, AC005523, AC004491, and AL022323.
HNFIU47	3952	720315	1 - 378	15 - 392	AA482321, and A90848.
					N27743.
HNFIJ29	3953	941525	1 - 498	15 - 512	AL117340.
HNFIJ60	3954	740362	1 - 420	15 - 434	
HNFIJ78	3955	723390	1 - 318	15 - 332	
HNFIJ80	3956	752489	1 - 1036	15 - 1050	
HNFIJ30	3957	574145	1 - 418	15 - 432	
HNFIJ33	3958	702411	1 - 425	15 - 439	
HNFIJ44	3959	860847	1 - 578	15 - 592	AC007275, and AC006366.
HNFIJ59	3960	738593	1 - 545	15 - 559	R35010.
					T06440, AL491715, AL097211, AA715280, AL866336, AL382825, AL561027, AC007684, AC006071, AC005026, AC005041, U91322, AC005274, AL136297, AC007011, AC007263, AL118497, AC000085, AC004000, AC005102, AL022318, AC006205, AL035699, AC004764, AC006501, AC004895, AF111168, Z99716, AC002351, AC006120, AF053356, AC004938, Z97056, AC003957, AC004019, AL022165, AC005833, AB001523, AC007421, AC008055, AL049538, AL049694, AC004583, AC004821, AC007637, AC006511, AC004106, AC005003, AL021918, AC007371, AF109907, AL132987, AC002347, AB000877, AC002287, AL049636, AC004494, AC005839, U52112, AC006046, AC004617, AC005696, AC007151, AP000032, AL122020, Z94056, AL049757, AC002425, AC005358, AL031296, AL096791, AP000306, AC006441, AL121756, AC005736, AC005231, AC005911, AC005944, AC005288, AL031680, AL031767, AC005971, AC008044, AC003664, AC004967, AP000688, U95740, AB023048, AC004659, AC007676, AC005089, U96629, AC012085, AC005071, and AC005409.
HNFIJ70	3961	956187	1 - 890	15 - 904	AL912090, and AA553367.
HNFIJ50	3962	724666	1 - 118	15 - 132	
HNFIJ53	3963	527977	1 - 213	15 - 227	
HNFIJ45	3964	526940	1 - 283	15 - 297	AW084484, AA482801, AL766115, AB017919, AB010999, and AB008803.
HNFIJ10	3965	968271	1 - 293	15 - 307	AB10682, AL357542, AL364801, AW138908, AC005041, AC007546, AC005325, AC012627, L09706, AP019413, AC000052, AC004019, X69908, Z68284, AC006058, AP000354, AL022477.

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HNGAH27	3966	573087	1-298	15-312	
HNGAL23	3967	676296	1-355	15-369	AL187426, AC006352, AC007028, AC006359, AC002041, U91320, and AC005591.
HNGAL35	3968	538467	1-252	15-266	AA296593, AL022069, AL031386, AC005381, AL049613, AL035351, AB020862, AC007073, and AC004990.
HNGAJ10	3969	860751	1-398	15-412	AL121840.
HNGAJ82	3970	577407	1-200	15-214	A52418, and A67829.
HNGAK12	3971	660682	1-420	15-434	AA361909, AA305740, AA127756, AA769607, AA703462, AW294771, AF096300, AL137755, AB014587, AC005035, U88984, and AB013385.
HNGAK70	3972	860770	1-353	15-367	AC002303.
HNGAL51	3973	531719	1-235	15-249	
HNGAL84	3974	573099	1-166	15-180	
HNGAL88	3975	574666	1-243	15-257	AC005576, and U95626.
HNGAL92	3976	953889	1-199	15-213	
HNGAN28	3977	685436	1-150	15-164	AC008012.
HNGAN78	3978	577412	1-432	15-446	AL660791, and AL660768.
HNGAO40	3979	660305	1-158	15-172	
HNGAP18	3980	666852	1-321	15-335	AA580572, AW079831, AC005914, AC005529, AC006538, AC005527, AC007731, AC005500, AC006251, AC007536, AC005694, AC006273, AL121652, M63005, M63544, AL049869, AC005594, U91325, AL022323, AC004752, AC005084, AL023587, AL023575, AC004934, AFI146367, AC005091, AL023803, AL031846, AF124523, X16289, and AC006130.
HNGAP59	3981	916323	1-152	15-166	
HNGAO54	3982	574647	1-211	15-225	
HNGAR83	3983	574470	1-375	15-389	
HNGAS51	3984	773208	1-231	15-245	AL023913.
HNGAU59	3985	860839	1-77	15-91	AC000365.
HNGAU65	3986	925692	1-235	15-249	
HNGAV04	3987	506589	1-431	15-445	

[illegible]



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					AC005553.
HNGBE26	3999	684761	1 - 361	15 - 375	
HNGBF41	4000	571331	1 - 359	15 - 373	
HNGBF80	4001	574475	1 - 345	15 - 359	
HNGBG20	4002	860739	1 - 341	15 - 355	
HNGBG50	4003	577364	1 - 273	15 - 287	AC002492.
HNGBH04	4004	574469	1 - 163	15 - 177	
HNGBH17	4005	577361	1 - 302	15 - 316	
HNGBH10	4006	968246	1 - 323	15 - 337	AC004538.
					TI8597, AA385335, AA585098, R45895, R29657, Z32822, D51433, AA585101, Z32887, D57491, D59751, D61185, C15406, D53161, R28735, R29445, C15509, AI525316, AI557262, AI526078, AI526140, AI557864, R28892, AI541356, R28965, AA585378, AA585155, AI541365, AI525500, AI557740, AA170832, AA585439, Z28355, D60765, D54897, D60844, D59436, Z33559, AI557809, AI557718, R29218, AI546999, AI548993, AI545325, AI541517, AI557731, D54850, D52835, AI526016, R28967, R28895, AI546971, AI557727, AI541205, AI526184, AI525356, C16294, C16315, AI547250, AA283326, AI541383, AI555639, AI5468875, D535233, D59438, AI540903, AI557763, AI547039, AI557787, D61254, D53447, AI557734, C16300, C16296, AI557004, C16292, C15120, C15762, AA385476, AI526109, D53472, C16293, AI557807, AI541346, AI541013, AI547202, AI546831, AI557533, AI525306, AI526024, C16305, C15737, AI541374, AI541034, AA585356, AI557408, D60730, AI557758, AI546945, AI525431, AI547196, AI557279, AI525339, Z36724, AI526191, AI557155, AI535660, AI526194, AA585430, AI526117, AI557602, AI526112, AI541523, R29179, Z30131, D57186, AI557852, AI546921, AI540974, AI541307, AI546996, AI541321, AI540967, AI546891, AI525320, AI547006, AI557586, AI526158, AI546901, AI557317, AI536138, AI541492, AI557808, AI525168, AI526146, C14208, AI541422, AA585453, R29262, AI525656, AI546829, R29172, AI526113, AI541402, AI557264, AA585389, AI557709, C16290, AI541327, AI526195, R29177, AI541515, AI526176, AI557810, AI557039, AI541423, AI556967, T19407, AI547189, AI525114, AI557786, AI524904, AI525076, C14210, AI526073, AI547137, AI541415, AI526180, AI541027, AI546954, AI526187, AI557533, AI526205, AI526169, AI541415, AI526180, AI541027, AI546954, AI526187, AI557533, AA585434, AI525286, AI557785, AI527238, AI524891, AI540944, AA585117, T41329, C14322, AI541345, AA585420, AI557796, AI529433, AI540920, AI546828, AI541506, AI557082, AI524890, C14391, C14723, AA174170, AI526026, AI547158, AI541075, AI547026, AI540928, AI046024, AI540882, AI557285, AI547122, AI546841, AI541514, D51413, X76012, AR031358, AI547138, AI541390, AR062871, A25909, AR038855, X82786, Y09813, X76012, AR031358, AR031365, AJ243486, AJ244005, Y16359, AF082186, AR038762, Z32836, AR054723, X81969, D50010, D13509, X55486, AJ244004, A20702, AR062872, AR062873, A20700, D78345, A43189,

HNGBI35	4007	574403	1 - 126	15 - 140	A43188, AR017826, AJ244006, AR017907, AC005913, AJ244003, AR003381, Z30183, AC62298, AF213384, AR0050070, A82595, AF006072, A98420, A98423, A98432, A98436, A98417, A98427, X82834, and L36913.
HNGBI37	4008	781978	1 - 429	15 - 443	N72393.
HNGBI88	4009	574409	1 - 331	15 - 345	AC002310.
HNGBI95	4010	785983	1 - 223	15 - 237	AC005215.
HNGBI40	4011	948741	1 - 563	15 - 577	
HNGBI84	4012	573072	1 - 295	15 - 309	
HNGBI96	4013	574474	1 - 286	15 - 300	
HNGBN36	4014	526808	1 - 425	15 - 439	
HNGBO34	4015	932408	1 - 412	15 - 426	AC007380.
HNGBP21	4016	671258	1 - 498	15 - 512	
HNGBP28	4017	421816	1 - 201	15 - 215	H02689, T73124, AL080280, AL080281, and A68194.
HNGBP35	4018	526806	1 - 293	15 - 307	
HNGBQ20	4019	859846	1 - 523	15 - 537	
HNGBQ75	4020	573047	1 - 339	15 - 353	
HNGBS88	4021	575561	1 - 404	15 - 418	AA594214, AL612901, AC002365, AC002300, AC005921, AC003684, AC004778, and Z98946.
HNGBT44	4022	574400	1 - 343	15 - 357	AA252763, AL133723, AW193265, AD284640, F36273, F33566, AIG68846, F29898, AA858197, AL446464, AD350211, AA284654, AA678436, AW193432, AA515435, AA824655, AA530859, AA031073, AL071481, AD053672, AD283332, AS358501, AA515128, AL046409, F31204, AD061334, AA302648, H64777, A963720, F18974, F37286, AB24562, AS340747, T07451, AL610159, AK31303, A610491, AL471543, AL049634, AW406753, A1768952, AL358229, AL249997, AL466840, AW977743, A635988, AA337730, AL963095, AW276827, AL669453, AL427216, AA584655, F52576, AA719805, T29180, AW339687, AA846925, F30933, AL635272, AL064864, AL270117, AW193609, AC006287, AC004006, AF017829, AL131363, Z99571, AC006685, Z93928, AF027390, AC012599, AC007014, AL022329, AC005799, AC008132, AC002303, AL031630, AL109657, AL078638, AL021918, AL021368, AC007685, AL121578, AC005409, AF130342, AL078644, AC005911, AL021808, Z84480, AC005066, AC008071, AC007227, AC003050, U91319, AC006549, AC006367, AC006155, AC007221, AC006042, AL035551, AL078593, AC006322, Z97196, AC005751, AL049830, AL098681, AC005089, AC005291, AL049775, AC006195, AL096791, AC006012, AC004673, AC006500, AL022163, AC004869, AC010072, AC004485, AF000036, AL049697, AF000260, AC004690, AC005189, U91322, AC005324, AF000069, AC005303, AC021092, AF000099, AC007590, AL002160, AC004470, AL031433, AC006525, AP000335, AC007326, AF196971, AC006213, AB020858, AL078604, AC007687, AC006561, AC006738, AL033517, AC005755, AC004686.

HNGBT58	4023	577325	1 - 323	15 - 337	Z82975, AC003684, AL121658, AL023799, AL035086, AL135744, AC005914, AC005792, AC002386, AL035667, A229041, AC004025, AP001172, AC007043, AC006043, AC006313, AC007436, AC005699, AC000385, AP029308, AC002984, AL021307, AC005015, AC004554, AC016025, AL034548, AP043555, AC007845, AL031584, U69730, AL109798, AC005191, AC007262, AC003003, AP000359, AC002289, AL078639, AC005722, AC007681, AC005081, U73633, AP000567, AL049845, AL109939, AL011930, AL021155, AC004804, AC009223, AL121823, AL022727, AL049776, AC002367, AC005255, AP00159, AP181896, AC006017, AF165926, AC005013, AC003001, AP000020, AC004806, AC004547, AL049588, AC007363, AL133238, Z83840, AC005301, AC003083, AC006211, AC005400, and Z97181.
HNGBT58	4023	577325	1 - 323	15 - 337	AW162493, AW298244, AA435512, AW295626, AW295622, AA527713, AA663337, AA393547, AC005057, AC007536, AC005520, U82670, Z59900, and Z59880.
HNGBT72	4024	579064	1 - 358	15 - 372	
HNGBU15	4025	574467	1 - 209	15 - 223	
HNGBV67	4026	574468	1 - 420	15 - 434	
HNGBW63	4027	574466	1 - 216	15 - 230	
HNGBX64	4028	574472	1 - 96	15 - 110	
HNGBZ16	4029	667293	1 - 414	15 - 428	
HNGBZ17	4030	575717	1 - 437	15 - 451	AC005332.
HNGBZ20	4031	812895	1 - 318	15 - 332	
HNGBZ55	4032	573069	1 - 249	15 - 263	AI761359.
HNGBZ92	4033	574464	1 - 218	15 - 232	
HNGCA47	4034	574465	1 - 192	15 - 206	
HNGCA61	4035	574461	1 - 278	15 - 292	
HNGCB44	4036	674670	1 - 389	15 - 403	U95740.
HNGCC47	4037	926947	1 - 130	15 - 144	
HNGCD08	4038	959963	1 - 365	15 - 379	
HNGCE85	4039	970738	1 - 293	15 - 307	AA292726, AA887639, AL351774, AL655222, AW009008, and AL989605.
HNGCF09	4040	527972	1 - 139	15 - 153	
HNGCF28	4041	574397	1 - 222	15 - 236	
HNGCC83	4042	868075	1 - 389	15 - 403	H86238, and AC005670.
HNGCH05	4043	932404	1 - 476	15 - 490	H92525, H48715, AL085029, H90375, AL075537, R01389, AA668973, AL352404, AW103601, AL217313, W88502, H70430, AA528363, Z84480, AC003103, AC002352, AF196969, AC000357, AC005335, AC007535, AC003101, AC005520, U91322, Y11535, AF006752, AC005546, AC006162, AC005072, U82668, AL023913, AC002350, AC004834, AF061032, AC001228, AB018503, AC008989, AC005902, AC004887, AL035249, AC006166, AC006165, AB023051, Z73979, AC006313, Z98950, and AC006430.

HNGC002	4044	920722	1 - 224	15 - 238	
HNGC111	4045	967513	1 - 456	15 - 470	
HNGC117	4046	526807	1 - 403	15 - 417	
HNGC153	4047	825377	1 - 403	15 - 417	
HNGC169	4048	574456	1 - 264	15 - 278	
HNGC34	4049	706561	1 - 193	15 - 207	
HNGC82	4050	796479	1 - 130	15 - 144	
HNGC93	4051	574458	1 - 262	15 - 276	
HNGC131	4052	571332	1 - 395	15 - 409	
HNGC155	4053	574453	1 - 377	15 - 391	
HNGC005	4054	932409	1 - 133	15 - 147	
HNGC037	4055	708694	1 - 396	15 - 410	
HNGC045	4056	573055	1 - 370	15 - 384	
HNGC086	4057	779203	1 - 365	15 - 379	
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				AR2595, AR060385, A84916, AR028859, AJ132110, AB002449, A62300, A62298, AR018138, AR008278, AF058696, I50126, I50132, I50128, I50133, I14842, A45456, AR016514, AR066487, A43192, A43190, X67155, AR060138, Y17188, A94995, D26022, A26615, AR052274, Y12724, AR038669, A25909, A30438, AR066488, A67220, Y09669, D89785, A78862, D34614, AR054175, AR008443, Y17187, A63261, D88547, AR008277, AR008281, AR016691, AR016690, U46128, AR062872, D50010, A70867, AR016808, X82626, AR008408, I79511, A64136, A68321, AR060133, I82448, and AR025207.
HNGCQ37	4058	708698	1 - 325	15 - 339
HNGCU24	4059	574339	1 - 137	15 - 151
HNGCU70	4060	574340	1 - 141	15 - 155
HNGCW38	4061	574463	1 - 308	15 - 322
HNGCW81	4062	577253	1 - 389	15 - 403
HNGCW82	4063	574344	1 - 348	15 - 362
HNGCW83	4064	574338	1 - 126	15 - 140
HNGCX07	4065	953900	1 - 334	15 - 348
HNGCV37	4066	952203	1 - 546	15 - 560
				AI564185, A829565, AI133246, AC002416, AI031587, AP001052, AC006071, AI080243, AC004386, AI109759, AF001552, IJ52111, AI109798, AC005156, AC002546, AC006013, AI049776, AC005911, AC009336, AI049539, AC008372, AI035387, U85195, AI022165, AI035083, AC005411, AI049760, AF205588, AC004526, AJ246003, AP000031, AC005069, AC005342, Z68285, AI121658, AF2004552, AC005225, AI109628, AC006111, AI021707, AC005255, AI109963, AE000658, AC004019, AC005971, AF111168, AI031255, AC007773, AC002470, Z86090, AI033527, AC004805, AI031229, AI17329, AI022322, AP000359, U95742, AP000008, AP001037, AC005632, AP000704, AC006480, AC003109, AC008040, AC004770, AC009308, AI031387, AC006449, AI133448, AI022476, AC004478, AI031274, AI021579, AC007488, AC007543, AC006241, AC007221, AC005484, AI049829, AI008726, AI049766, AI109847, AF045555, Z93023, AC005102, AC002350, AC007325, AC005072, AC007981, AC005914, AF064861, AI050318, AC005562, AC005081, AC009248, AC004659, AC004139, AI024447, AF000555, AI035455, AC004859, AI133163, AC005703, AC005488, AC002302, AI049692, AC007283, AI133245, and AC004134.
HNGCV41	4067	806055	1 - 272	15 - 286
HNGCV43	4068	574392	1 - 333	15 - 347
HNGCV59	4069	959967	1 - 784	15 - 798
HNGCZ13	4070	660916	1 - 394	15 - 408
HNGDA09	4071	574452	1 - 220	15 - 234
HNGDA56	4072	574452	1 - 324	15 - 338
HNGDB25	4073	784836	1 - 364	15 - 378
				AC002127.
				AA649070, AA210872, AA809496, AI567520, AA405464, and N67248.

HNGDB65	4074	526852	1 - 248	15 - 262	AL022101, and AL023753.
HNGDD30	4075	573021	1 - 421	15 - 435	T18897, AA385325, Z32822, AA385378, R48895, AA585098, R29657, Z22887, D59751, D53161, AA585329, AA585101, C15406, D57491, D61185, Z33559, R28735, R29445, D59458, A1557718, A1525316, A1541356, A1557262, C15069, A1557864, A1557740, A1526078, A1525000, D51433, R28892, D59436, R28965, D54830, A1541517, AA385439, Z28355, AA585155, A1526140, A1541365, R28967, A1170832, A1535639, D60765, D54897, D60844, Z36774, R29218, A1541205, A1557809, A1525556, A1557727, A1557731, A1546831, A1546891, R28895, A155660, A1541535, A1557787, A1526016, A1526184, A1540903, C16294, C16135, AA385430, A1541034, AA283326, A1557084, A1541383, A1546699, A1557533, AA385356, A1546675, A1547250, D55233, A1557763, A1547039, D61234, D53477, A1557734, C16292, C15120, A1557602, D52835, A1526112, A1526117, D53472, AA385476, A1557408, A1541346, A1557602, A1557807, C16300, A1541013, C16296, A1525339, A1526024, C16293, A1557852, D30843, A1525306, A1547196, C16305, C15737, A1525302, A1541374, A1557155, AA385389, A1557317, A1526109, A1536138, A1547202, D60730, A1525168, A1557758, A1526146, A1546945, A1525431, A1526158, A1526191, A1541515, A1526194, A1540974, A1546921, A1541321, A1541307, A1525520, A1541492, A1546901, A1557279, A1557810, A1547140, Z30131, A1557808, A1541423, A1528856, A1526176, D57186, A1557264, A1541353, A1557799, A1541516, A1547189, A1546996, A1540967, A1546891, R29179, A1541402, A1547006, A1546829, AA385453, A1526114, A1526195, A1541422, A1557041, C14210, C14208, A1541527, A1525656, A1526169, A1557039, D61060, A1525076, A1540944, A1526113, R29262, R29172, C16290, A1524904, R29177, A1524891, A1541027, A1540944, A1556967, A1557786, AA385117, T19407, A1546954, A1525332, A1526073, A1529433, A1547137, AA385420, A1557238, A1557796, A1541510, T41289, AA514191, A1524890, A1526187, A1557785, A1526205, A1540928, A1541506, A1541415, A1541075, A1547158, A1541345, A1541450, A1525286, A1546828, D51413, A1557082, T41329, D50992, A1526026, A1046024, A1547122, A1546841, A1540920, A1557802, A1557285, A1547026, A1547138, A1557543, A1541362, A1540882, AR062871, A25909, AR038855, X82786, Y09813, X76012, A85395, A70872, A70869, A85476, U94592, AR031358, AR031365, AR037157, U87250, AC005913, A1243486, AR017826, A1244006, A1244005, Y16359, AF082186, AR038762, Z30183, AR003381, A1213384, X81969, Z22836, A62298, AR044723, D50010, D13509, A1244004, X535486, A20702, AR062872, AR062873, A20700, D78345, A43189, AR050070, A82595, A82593, AR019057, AF006072, A1244003, X82834, A1535243, AB005666, L36913, and A1131952.
HNGDD73	4077	764596	1 - 452	15 - 466	AC005390.
HNGDE07	4078	953858	1 - 239	15 - 253	AFI09718, AC004908, AC006328, AC004916, AC004842, and A1133216.
HNGDE31	4079	794124	1 - 382	15 - 396	
HNGDF48	4080	723368	1 - 147	15 - 161	AL022098.
HNGDF72	4081	766217	1 - 315	15 - 329	AC004914.

HNGDC86	4082	577237	1 - 310	15 - 324	
HNGDH09	4083	573022	1 - 364	15 - 378	
HNGDH37	4084	917254	1 - 201	15 - 215	
HNGDH52	4085	914629	1 - 422	15 - 436	
HNGDH96	4086	573060	1 - 427	15 - 441	
HNGDK17	4087	860684	1 - 351	15 - 365	
HNGDK41	4088	574559	1 - 375	15 - 389	
HNGDL32	4089	935842	1 - 355	15 - 369	
HNGDL72	4090	574451	1 - 90	15 - 104	
HNGDL93	4091	927582	1 - 170	15 - 184	
HNGDO17	4092	973285	1 - 680	15 - 694	
HNGDP10	4093	968221	1 - 437	15 - 451	
					AW392414, AA721530, AA657910, R76962, AA362349, AL039309, AA211734, AA946848, R69527, H43771, AA714073, AA362348, AL471455, R87275, AL217131, H86221, AA429481, AA721523, AA483606, H84412, W63553, AL687343, AA570740, AA568204, AL06717, AW117723, H62550, AL107009, AL536858, AL577995, T69879, AA019003, AL041352, AW029269, AL568732, AL814682, AL758799, AA488689, AL708152, R87883, AW190277, AW272640, AW117704, AA805848, AA355367, AA018923, AA012829, AA489240, AL037052, R35734, AW148775, AL298787, AL215784, AA831801, T40629, H67064, AL473671, US1704, Z95327, AF196970, AF141325, AL022311, AC007207, AC007201, AC005796, AC005829, AL035458, M31303, X94912, AC006360, U29874, AC007880, Z49235, AC002037, AC007707, AP000694, AC004817, AD000684, AC002128, Z83845, AL049733, AC006101, AC005828, AL121754, AC004491, AP000501, AC003667, AC003070, AP000030, AP030453, AC012039, AC005088, AC005237, AP000248, AL034549, AC005920, M87889, AP000065, AL049776, AC003690, AC000075, AC003072, AC000084, AC002491, AP000313, AC007199, AP000193, AL049843, AP000050, AL023877, AL034417, AC008044, AL023775, Z95115, AC002400, AC007993, AL031667, AP000117, AC005666, AL022721, AC008009, Y10196, AC008018, AP000347, Z98749, AC004815, AL022331, AC016831, AL049540, Z98051, Z93244, AC002351, AC005274, AC005201, AL022326, AC007161, U85195, AB000658, AL135879, AL121790, AC005081, AC004647, AC005480, AL031666, AL024508, Z73417, AC005914, AC005015, AL034402, AB020690, AC005328, AL031721, AF006487, AC006275, AC004257, AD000813, AF027974, AC005619, AC004611, Z82243, AC004694, AL021453, AC004814, AP000289, Z98743, AL031905, AC005773, AP000042, AP000110, AC004996, AL050341, AC004079, AC005663, AC004703, AC003983, Z95113, AC005924, AF196972, AC004941, AB017602, Z84466, AC005664, AL049759, AC005844, US2111, AC007276, AC008064, AL080243, AC006547, AC005261, AL049780, AL022318, AC006530, AC003101, U47924, AC000353, Z93241, U94776, AP001056, AL031728, AC005071, AC002477, AC007363, AL035249, AC006210, AL034420, AP001054, AC007429, AL031407, AL008725, AP000348,

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	HNGDP13	4094	574484	1-452		15-466
	HNGDP27	4095	574482	1-433		15-447
	HNGDP29	4096	574488	1-401		15-415
	HNGDP30	4097	574480	1-351		15-365
	HNGDP71	4098	574481	1-348		15-362
	HNGDP74	4099	860669	1-487		15-501
	HNGDP89	4100	574478	1-389		15-403
	HNGDP95	4101	574477	1-315		15-329
	HNGDR19	4102	953672	1-376		15-390
	HNGDR42	4103	657404	1-284		15-298
	HNGDR79	4104	572904	1-248		15-262
	HNGDR81	4105	572901	1-364		15-378
	HNGDR88	4106	860666	1-311		15-325
	HNGDS04	4107	572909	1-533		15-547
	HNGDS59	4108	576763	1-250		15-264
	HNGDS96	4109	796488	1-504		15-518
	HNGDT36	4110	572895	1-400		15-414
	HNGDD45	4111	722062	1-504		15-518
	HNGDV22	4112	572910	1-432		15-446
	HNGDV25	4113	573152	1-287		15-301
	HNGDV59	4114	739407	1-98		15-112
	HNGDV96	4115	796487	1-501		15-515
	HNGDW23	4116	576773	1-420		15-434
	HNGDW62	4117	573162	1-290		15-304
	HNGDW95	4118	661943	1-488		15-502
	HNGDX50	4119	860661	1-300		15-314
	HNGDY12	4120	870390	1-585		15-599
	HNGDY14	4121	968042	1-258		15-272
	HNGDY39	4122	572908	1-396		15-410
	HNGDY92	4123	920168	1-409		15-423
	HNGDZ52	4124	572865	1-348		15-362
	HNGEA44	4125	572855	1-149		15-163
						AP000274, and AP000105.
						AF118808.
						AC006166, AB023051, and AP000512.
						AP000345.
						AP001054.
						AC006263.
						AC005702, and AC003976.
						AL033538.



HNGEA82	4126	778879	1 - 165	15 - 179	AL021367.
HNGEA88	4127	578911	1 - 348	15 - 362	AC002492, and AC002045.
HNGEB79	4128	576743	1 - 385	15 - 399	297351.
HNGEB81	4129	572862	1 - 299	15 - 313	AP000250, AP000030, AP000133, and AP000211.
HNGEB91	4130	924912	1 - 340	15 - 354	
HNGEC02	4131	917530	1 - 987	15 - 1001	AA585439, A1525328, A1525556, A1535639, AA585453, Z28355, A1541523, A1546855, A1541374, A1525316, AA585440, A1546899, A1525306, A1541514, Z013131, A1526140, A1556967, AA585101, AA585434, A1546899, A1541508, A1557807, A1541510, C15189, A1526194, A1525431, A1557084, A1546945, A583356, A1541509, A1546828, A1541013, A1541365, A1526180, A1541535, A1547039, A1550967, A1557731, T11028, A1541017, A1535660, A1557799, A1557787, D61254, R29445, C16300, R28735, A1541307, A1536138, A1040625, A1045817, A1041142, A1041238, A1041133, A1040322, A1041131, A1046330, A1041051, A1041292, A1040119, A1047036, A1047170, A1047057, A1047219, A1041227, A1040463, A1039915, A1043612, A1041197, A1040155, A1041346, A1040529, A1041096, A1047012, A1041358, A1041277, A1041163, A1040510, A1041098, A1040621, A1043538, A1041324, A1040464, A104162, A1041086, A1043496, A1041296, A1041233, A1526196, A1526184, A1041159, A1045725, A1041140, A1040193, A1043467, A1044186, A1557262, A1044037, A1040091, A1040128, A1040168, A1040255, A1040285, A1040370, A1043677, A1046442, A1040535, A1040332, A1040617, A1045684, A1040745, A1040370, A1043492, A1041602, A1045920, A1040149, A1041752, A1043775, A1044165, T23985, A1034392, A1041602, A1045920, A1040149, A1038838, A1040253, A1044074, A1041635, A1546875, A1525321, A1045990, A1040458, A1044199, A1044187, A1040263, A1040090, A1040294, A1040329, A1040082, A1044272, A1041186, A1040148, A1041730, A1041523, A1043627, A1046392, A1541205, A1041374, A1040052, A1043845, A1043537, A1039338, A1042135, A1044064, A1039316, A1041392, A1038983, A1043814, A1043848, A1041459, A1043570, A1041577, A1044201, A1044258, A1046850, A1038532, A1040768, A1037727, A1046994, A1040414, A1540920, A1040576, A1040571, A1046914, A1102134, A1043535, A1044274, A1079878, A1049018, A1040444, A1585476, A1526144, A1045857, A1039744, A1541343, D57491, A1038822, A1045671, A1046327, A1041168, A1049069, A1043444, A1041246, A1040472, A1557796, C16305, A1040238, T41289, A1041347, A1041955, T23957, A1525320, A1038761, A1040075, A1546891, A1535813, A10880031, A1526187, R29177, A1045989, A1526073, A1046147, A1239433, A1042096, A1044529, A1541317, A1557082, A107436, A1039643, A1039360, D55233, A1037435, R29218, T23888, A1557802, A1044125, A1557238, A1525653, AA174170, A1541415, A1541390, A1079852, A1040252, A1525339, AA585155, A1557155, A1045211, A1557277, A1043950, A1134123, A1541506, A1525856, D61185, A1557734, A1541534, R45895, A1557279, A1041210, A1037341, A1557740, A1023494, A1017907, I13349, A91965, X81969, I46481, I66485, I66487, A1008429, A1038855, A1062871, A125909, I66495, I66494, I66498, I66497,

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HNGEC06	4132	935840	1 - 303	15 - 317
HNGEC41	4133	782294	1 - 433	15 - 447
HNGEC43	4134	573040	1 - 425	15 - 439
HNGEC44	4135	806031	1 - 626	15 - 640
HNGEC75	4136	916809	1 - 619	15 - 633
HNGED03	4137	924696	1 - 295	15 - 309
HNGED21	4138	920156	1 - 335	15 - 349
HNGED77	4139	572868	1 - 358	15 - 372
HNGED91	4140	790309	1 - 450	15 - 464
				AA501465, AL120191, H71450, A7339743, A053560, A0307353, A7301906, A414081, A7302711, A1953573, A1133727, A514024, A1020993, A1109865, A0004671, A1118516, A1050338, A0006285, A0016025, A1031773, Z98743, A0004841, A0002418, A0004386, A103330, Z49250, A0005225, AFI165138, Z84486, A0006080, A1022727, A0005945, A0005795, U60683, A1109963, A000004, A1121852, Z94160, A0005150, A0002044, and A0004262.

HNGEE18	4141	573018	1 - 308	15 - 322	<p>           FI6345, AA353081, A1054090, A1251944, A16169469, A17243945, A4489897, A1358008, A1251024, A1246061, A4594705, A1376197, A1567941, A1119563, A1027393, A1725432, Z94161, AC005081, AC004386, A1023807, A1031255, A1050318, AC006064, U91326, AC05778, AC05822, AC05971, AC004674, A1022336, AC007216, AC007055, A1133246, U02051, A1080242, A1030453, A1080243, A1045555, A1022326, AC002425, U95742, AC005088, AC005200, A1001549, A1109628, A1049636, AC005015, AC004491, A1008582, AC007011, A1133396, A1011930, AC002565, AC007406, A1031597, AC002357, AC005280, AC002504, AC002527, AC005527, AC003029, AC004148, AC003104, AC003966, AC005317, AC003982, AC002395, AP000689, AC006241, AC004913, Z85994, AC005796, AC004841, AC004922, A1001548, AC007283, AC007227, A1133163, AP000133, AP000211, A1021155, A1009183, Z73359, Y17293, AC006529, AC006274, A1132992, A1035587, AC006130, U95740, A1031846, L76568, A1023879, AC006126, AC007066, AC003957, A1049776, A1003147, AC007050, A1050333, AP003555, AP001350, A1050307, AC006441, AC005049, AC002517, U85195, Z92542, Z84466, AC007371, AC004019, AC007191, A1047825, AP000690, AC007666, A1034549, AC007934, AC006121, AC006285, A1132712, AC005696, AD000812, Z99716, AC006544, A1022476, AC016025, AC004929, AC004883, AC009946, AC007225, U91323, AC004031, AC004213, AC005069, A1196969, AP000359, A1022163, AC004526, A1049759, AP000493, AC006077, AC004383, AC007731, AC007308, AC005919, A103626, A1049759, AP000493, AC004991, AC007239, AC005500, AC005562, AC004893, AP000255, AC005749, U78027, AC005755, AC002126, Z84467, AP000549, AC004859, A1034379, A1080313, AC005988, A1030771, AC005516, AC005189, AC007536, AC002470, AC002430, A1034420, Z68324, A1196779, AC004560, AC004797, AC007384, A1049540, A1117344, AC005993, AB022785, AF053556, Z83838, A1035422, and AP000228.         </p>
HNGEE19	4142	573065	1 - 293	15 - 307	
HNGEE58	4143	708692	1 - 338	15 - 352	
HNGEG45	4144	572880	1 - 335	15 - 349	
HNGEG74	4145	860685	1 - 404	15 - 418	
HNGEG85	4146	784431	1 - 353	15 - 367	
HNGEG86	4147	573049	1 - 273	15 - 287	
HNGEI22	4148	967310	1 - 349	15 - 363	
HNGEI47	4149	720471	1 - 439	15 - 453	
HNGEI04	4150	932199	1 - 239	15 - 253	
HNGEI22	4151	573066	1 - 182	15 - 196	
HNGEI35	4152	934987	1 - 545	15 - 559	
HNGEK30	4153	572864	1 - 263	15 - 277	

HNGEK44	4154	576745	1 - 442	15 - 456	N21074, AW089204, A1431104, H67851, A4323110, A1061076, A1031273, AC016027, AC016830, AC004408, AC006344, AC009721, AC000353, AC003029, A1096774, Z86090, AC005231, A1049830, AC004522, AC005383, AC005901, AC008115, AC018767, AC004841, AC006277, AC003098, AC006141, AF111169, AC005730, AP000555, AC005229, AC002418, AC004386, AC004216, AC003982, AF11325, A1020997, A1021939, AC007688, AC006071, A1049776, AC005899, AC005004, A1033525, AC002492, and A1031291.
HNGEK68	4155	753159	1 - 328	15 - 342	
HNGEL62	4156	958363	1 - 576	15 - 590	T83534.
HNGEL92	4157	572867	1 - 359	15 - 373	
HNGEM38	4158	573041	1 - 361	15 - 375	
HNGEM53	4159	860043	1 - 388	15 - 402	
HNGEN37	4160	662955	1 - 397	15 - 411	
HNGEN45	4161	572876	1 - 350	15 - 364	
HNGEP55	4162	732262	1 - 351	15 - 365	
HNGEP61	4163	576749	1 - 296	15 - 310	
HNGEP64	4164	860631	1 - 1144	15 - 1158	A1583142, AC004491, A1022165, A1034549, AC005015, AC005585, AC004104, AC002352, U63721, AC002045, AC004997, A1020997, AC005089, AC005412, AC002554, AC002400, and AC007425.
HNGEP70	4165	572858	1 - 359	15 - 373	
HNGEP75	4166	766574	1 - 422	15 - 436	
HNGEP77	4167	861710	1 - 417	15 - 431	H14806, AW410740, A1434025, AC009542, and AC0099330.
HNGEP81	4168	778161	1 - 867	15 - 881	
HNGEQ07	4169	953647	1 - 616	15 - 630	AW407886, AW239264, and A0602112.
HNGEQ32	4170	572984	1 - 266	15 - 280	A1092509.
HNGEQ67	4171	860687	1 - 297	15 - 311	
HNGER25	4172	572873	1 - 85	15 - 99	
HNGER43	4173	699391	1 - 302	15 - 316	A1021921, and U95738.
HNGER67	4174	578903	1 - 495	15 - 509	AC007563, AC000030, A1022095, Z93928, AC002523, AC005035, AF043945, and A1008634.
HNGER82	4175	945838	1 - 625	15 - 639	AF104455.
HNGER84	4176	586451	1 - 355	15 - 369	R16017, AA570454, R02443, R16118, T77361, R06273, and T77056.
HNGER96	4177	922996	1 - 505	15 - 519	A1763088, A1135549, AC010385, A1223814, A1223777, X99326, and AF042089.
HNGES56	4178	733543	1 - 291	15 - 305	
HNGES59	4179	490034	1 - 600	15 - 614	F30908.
HNGES89	4180	573013	1 - 418	15 - 432	
HNGET07	4181	953618	1 - 397	15 - 411	
HNGET31	4182	506498	1 - 460	15 - 474	

HNGE167	4183	953529	1 - 356	15 - 370	AL046457, AL826263, AL604333, AW402063, AA359347, AA101689, AW021583, AA679936, AA846952, AP637320, AL464441, AA502104, N48230, AF732120, AA507824, AL1561060, AA487621, AL686242, AL696955, AA707833, AA665021, AW080120, AA666052, AA126450, AA548058, AW070892, AW302013, AA773153, AW102849, R79698, AA745326, AL635279, F17149, AL811809, AA806796, AF737355, R40056, AL042753, AL499588, AA610777, AL669453, AL508034, AA250819, AA639173, AA713626, AW440497, AL119713, AC005015, AC005083, AL020993, AL121603, AC002425, AL022316, AL096791, AC005071, U95746, AC004983, AC004150, AC006312, AL022165, AC003080, AL024507, AC005751, AC005736, AL049569, AP000240, AC005037, AC007227, AC009399, AC006449, U95742, AF088219, AC004019, AC002365, AC002350, AC005839, AL035079, AL121694, AL031577, AL023807, AL031283, AC004638, AL034429, AC007243, AC006115, AC005385, AC002492, AC005231, AL096774, AC005102, AC004263, AL021155, AC006116, AF109907, AL035072, AC005486, AC009516, Z97053, AC002470, AC002565, AC005996, AF045555, AC007216, AL022721, AC005089, AC004675, AL049869, Z68870, AC004216, AF033356, AL109827, AC006057, AC004821, AC004876, AC016025, AC002395, AP000689, AC002070, AP000557, AC004491, AC007546, AL050318, AC002314, AC005722, U47924, AC002310, AC004990, AL132992, AC004966, AP000201, AP000555, AL132777, AC007384, Z83840, AC005666, AC005519, AC006271, AC006211, AC004882, Z82201, AC004859, AF031078, U80017, AP000097, AL121655, AC007510, AL035423, AC005041, AC004531, AC006241, AC006261, AC005527, AL009179, AC002472, Z85986, AC0065914, AC004686, AC005031, AF030876, AC007207, AC007387, AC003982, AL035071, AF196969, AC007664, U91323, AC005154, AL031311, AL021546, AL034451, AC004815, AC003681, AC006948, Z84469, AC004841, AC006285, Z93017, AP000133, AP000211, AC002301, AC005829, AL050341, AL031767, U91326, AC007225, AC007999, AL035695, AC002072, AL031659, AP000556, U82671, AC004699, AP000553, Z95116, AC005899, AC008372, AC002430, AL022322, AL080243, AL246003, AC004878, AC008101, AC006547, AL031680, AC006111, AL021807, AC006388, AL109984, AP000493, AC004929, AC002429, AC002316, AL022315, AC002563, AL035415, AC005291, AC004668, AC005480, AC002400, AC004972, AC005783, AL078477, AC007676, AC007011, AC006537, AC003108, AC007919, AL022311, AC005288, AC004975, AP000209, AP000131, AC000044, AC006680, AC002984, AF038458, Z83838, AC006965, AC007388, AC007686, AC005844, AC005180, AC005193, AC005821, AC007298, AC007845, AC004560, AL031594, AL010770, Z83822, AC006023, AC005529, AB023049, AC006507, Z99716, AL023879, AL021154, AL023575, AC005632, AC007421, AC005778, AP000346, U85195, AC005162, AC012384, AC004598, AJ006345, AC005358, AL035089, AC005726, AC004905, AC004813, AL136295, AF064861, AL133246, AF205588, AL049795, AL031584, AC004671, AL031427, AC007324, AC006544, AL109801, AC011718, AC006480, and AL035659.
HNGE035	4184	853582	1 - 724	15 - 738	

HNGEU37	4185	860626	1 - 134	15 - 148	AA378548, and AC005071.
HNGEV33	4186	781207	1 - 400	15 - 414	AW275432, AA601376, AF191659, CI5966, AL048969, AW151247, AA730872, AA761606, AI521525, AI090377, AW020150, AD224583, AA761714, AA719564, AI926102, R23873, AA573067, RA2954, AA831426, AI613459, AA298365, AA501807, AI801563, AA586474, AA723132, AA493546, AA064983, AW270652, AI135761, CI4614, AA504974, AA720671, AA174108, AA488930, AA528907, AW277389, AA565338, AA654705, AA661583, AA516242, AA470612, AA526542, AA297208, F23338, AA708751, AA555131, AW264548, AA503144, AI754421, AI879968, AA218684, AI134338, AA767558, AI09943, AA420787, AW008089, AA493245, AA350886, AA524604, AW194046, AW075296, D44672, AA738014, AA729330, AI049845, AI040313, AI910609, AA515165, AI678812, AI798521, AI084320, AA718906, AA984114, AA484892, AA808875, AI952885, AI079734, AI760835, AA420801, AA733176, AI635440, AI148245, AI804539, TI5873, AI925423, AI042667, AI042670, AA669711, AI128353, AA056619, AI482725, AI567402, AA653221, AI986251, AA813902, AA765768, RA3331, AA601333, AI431232, AC008585, AC005520, AI079295, AC006132, AF111168, AC005399, AC009247, AI049757, AC005519, AP000037, AI023281, AI117337, AC005632, AP000555, AC007276, AI022334, AI122023, AI031680, AI133371, AC006430, AC005696, Z98946, AC004583, AC005730, AC005839, AI031295, AF067844, AC004491, AI031670, AI049694, AC002470, AC006531, AI033527, AC007263, AC005754, AB023048, AC005736, AC006468, AC005291, AC002302, AC005921, Z77249, Z93541, AI109865, AC004815, AC005829, AP000691, AC005234, AC006006, AC008115, AC005215, AI031311, AC007040, AC006241, AP000511, AI034554, AC004999, AC006205, Z98743, AI035086, AC008040, AP00114, AP000046, AC002449, AC007065, AC008072, AP000365, AC004019, AC008434, AC007390, AI022313, AI121655, AC006480, AC006001, AC004673, AC004890, AC008154, AC005011, AC004408, AI133448, AC005768, Z83844, AC000353, AC004386, AC007021, AC006511, AI034379, AI121769, AC002201, AI049830, AC005841, U91323, AC004832, AI031283, AI034548, AC002553, AF134726, AF055588, AP000099, AC003043, AP000359, AC005933, AI049766, AI034347, AP000552, U91326, Z84466, AI031123, AI030995, AI049794, U82828, Z98884, AC005229, AC005920, AC002400, AC006938, AI022932, AI008123, AC001863, AC002544, AP000036, D84394, AC006285, U47924, Z85986, AC002492, AC007298, AI049872, AC005081, AI121658, AC005484, AC004081, AC006079, AC010205, AC003108, AC005071, AC004802, AI133246, AC006597, AI035420, AC006101, Z82201, AI024509, Z99716, AP000350, Z86990, AC006115, AI031643, AC003101, Z75890, AC007421, AC004605, AI031121, AC004895, AC003007, AC004686, L78833, AC005015, AI031120, AC004526, U91327, AC004638, AC005013, AC004000, AC005060, AC008498, AC005914, AI133321, Z81369, AC002310, AC004967, AC005261, AI011930, Z95113, AF001550, AI031255, AC007917, AI035587, AB004907, AF053356, AI009181, AI096763, AC005924,

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HNGEV38	4188	572882	1 - 313	15 - 327	AC006263.
HNGEV40	4189	572894	1 - 302	15 - 316	
HNGEV53	4190	573090	1 - 301	15 - 315	
HNGEV59	4191	576750	1 - 305	15 - 319	
HNGEV65	4192	750391	1 - 585	15 - 599	AA644587, AA135942, AA004231, AL044969, H30905, R01285, AL079521, R01173, and AC004223.
HNGEV70	4193	573089	1 - 128	15 - 142	
HNGEV75	4194	506312	1 - 246	15 - 260	AL034429.
HNGEV86	4195	789128	1 - 89	15 - 103	H23596, H40504, and H21110.
HNGEV88	4196	750542	1 - 326	15 - 340	
HNGEV18	4197	958328	1 - 336	15 - 350	
HNGEV76	4198	572874	1 - 276	15 - 290	AA362395, AW051064, AL085439, W25284, AA652057, AA649642, A1446464, AA125788, AA348859, AL037876, H13868, AA441788, N71724, R01744, AA329192, A1886176, AL064864, AA095511, AW419262, R76463, AW088058, AW074207, AA654627, AA119860, AA826032, T62712, AH49360, A1623696, F24284, T90706, R45369, AA337978, AA058839, AA368030, AL048616, AA491814, AA147516, AL299050, AW406447, T56472, R93061, A1281903, AW192154, AL371429, N23649, AA332991, AL423625, AA650244, AA199798, F32705, AL003172, AW274101, AA398997, AL138455, AA713767, AA364315, H00934, AA218645, W60516, H172666, AA134367, W95976, W95841, W00796, T33607, A1184354, A1537955, AA318652, AA1048925, AA654771, AA501722, R24205, AA702023, AA342958, N25296, AW069481, A1925556, H22147, A714453, AW083402, AA657918, AW021917, AA878140, N66026, A1612032, AA678436, AA557325, F25276, AA127636, A1409903, A1927741, F35659, AA587256, AA888310, AA340003, AA614069, AL049634, R76777, A1348611, D82290, AL309460, T06556, AL1135405, AW337237, H03415, AW088984, AA309389, AA828984, R69934, AL167741, R66878, N58534, AL305766, A1246796, AA879430, AW083364, A1926023, AL076632, AW103679, AW103383, A1709066, H16048, AA932099, AA489775, AA578141, H17643, AA581342, AA338522, AA919037, AA649705, A1863283, T16592, AA259245, AA73208, AA533725, R44592, W56200, AA021133, N29941, AW008317,

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HNGFB08	4214	959738	1 - 365	15 - 379	
HNGFB52	4215	573755	1 - 325	15 - 339	
HNGFB57	4216	688072	1 - 249	15 - 263	
HNGFB74	4217	573024	1 - 160	15 - 174	
HNGFC71	4218	573160	1 - 352	15 - 366	
HNGFD63	4219	835997	1 - 458	15 - 472	
HNGFD75	4220	823462	1 - 354	15 - 368	
HNGFD85	4221	783467	1 - 394	15 - 408	
HNGFD96	4222	968248	1 - 544	15 - 558	
HNGFF35	4223	805906	1 - 635	15 - 649	
HNGFG22	4224	573084	1 - 398	15 - 412	
HNGFGS1	4225	725787	1 - 203	15 - 217	
HNGFG57	4226	860595	1 - 326	15 - 340	
HNGFGE9	4227	926873	1 - 301	15 - 315	
HNGFH94	4228	966118	1 - 522	15 - 536	
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					AN707443, H46169, and H51510.
					R69993, and AA779921.

HNGF06	4229	935828	1 - 415	15 - 429	
HNGF10	4230	578896	1 - 338	15 - 352	
HNGF12	4231	699398	1 - 334	15 - 348	
HNGF181	4232	578892	1 - 402	15 - 416	R98238, AC002306, and 297192.
HNGF127	4233	860591	1 - 382	15 - 396	
HNGFK28	4234	544726	1 - 977	15 - 991	
HNGFK44	4235	860389	1 - 255	15 - 269	
HNGFL04	4236	572833	1 - 330	15 - 344	
HNGFM50	4237	584729	1 - 392	15 - 406	D83779.
HNGFM74	4238	578884	1 - 510	15 - 524	
HNGFM79	4239	860385	1 - 287	15 - 301	
HNGFN21	4240	572821	1 - 368	15 - 382	AL049836.
HNGFN56	4241	970740	1 - 337	15 - 351	AA411753.
HNGFN63	4242	576698	1 - 473	15 - 487	
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HNGF046	4244	935135	1 - 255	15 - 269	
HNGF053	4245	572856	1 - 356	15 - 370	
HNGF081	4246	526792	1 - 261	15 - 275	AC008981.
HNGF002	4247	920483	1 - 336	15 - 350	
HNGF008	4248	959730	1 - 362	15 - 376	AL008720.
HNGFP62	4249	573052	1 - 341	15 - 355	
HNGFP80	4250	931021	1 - 359	15 - 373	AC006453.
HNGFP93	4251	707332	1 - 347	15 - 361	AC007136.
HNGFQ36	4252	703715	1 - 358	15 - 372	
HNGFQ58	4253	576715	1 - 483	15 - 497	
HNGFR02	4254	920482	1 - 310	15 - 324	
HNGFR16	4255	573358	1 - 357	15 - 371	US1560, and Z80896.
HNGFR48	4256	860245	1 - 481	15 - 495	H80158.
HNGFR73	4257	646263	1 - 469	15 - 483	
HNGFR80	4258	576713	1 - 422	15 - 436	
HNGFR85	4259	572838	1 - 373	15 - 387	AC004605.
HNGFS46	4260	573094	1 - 403	15 - 417	
HNGFS58	4261	932396	1 - 315	15 - 329	
HNGFS71	4262	572828	1 - 328	15 - 342	Z68225.
HNGFT19	4263	671599	1 - 555	15 - 569	AL031055.
HNGFT77	4264	772335	1 - 396	15 - 410	
HNGFU12	4265	971170	1 - 412	15 - 426	AL050337.
HNGFU28	4266	860576	1 - 260	15 - 274	
HNGFU40	4267	559450	1 - 355	15 - 369	
HNGFV03	4268	924670	1 - 197	15 - 211	AC005155.
HNGFV32	4269	806047	1 - 409	15 - 423	
HNGFW09	4270	924693	1 - 327	15 - 341	

HNGFW15	4271	578901	1-206	15-220	
HNGFW31	4272	578864	1-317	15-331	
HNGFW82	4273	839957	1-230	15-244	Z68756.
HNGFW96	4274	959715	1-461	15-475	
HNGGA08	4275	959637	1-294	15-308	
HNGGA10	4276	964820	1-364	15-378	
HNGGA20	4277	764502	1-435	15-449	AC006160.
HNGGA40	4278	506337	1-343	15-357	
HNGGA44	4279	577362	1-248	15-262	AC005220.
HNGGA53	4280	576212	1-417	15-431	AC002288, AC004111, AC007130, AC003950, Z84487, AC004905, AC003036, AC007030, AC005265, AL023807, AP000353, and AC022517.
HNGGA90	4281	572869	1-352	15-366	
HNGGB09	4282	881399	1-671	15-685	
HNGGB10	4283	964821	1-320	15-334	
HNGGB38	4284	576217	1-123	15-137	AC004583, and AC002041.
HNGGF02	4285	840277	1-289	15-303	
HNGGF03	4286	924587	1-371	15-385	
HNGGF06	4287	935709	1-361	15-375	AC008124.
HNGGF26	4288	577369	1-212	15-226	
HNGGF57	4289	576256	1-364	15-378	
HNGGG02	4290	920379	1-386	15-400	AP048728.
HNGGG10	4291	964818	1-296	15-310	
HNGGG15	4292	576294	1-314	15-328	
HNGGG18	4293	506304	1-318	15-332	
HNGGG22	4294	576267	1-263	15-277	
HNGGG25	4295	679153	1-99	15-113	
HNGGG26	4296	576298	1-320	15-334	
HNGGG50	4297	576295	1-372	15-386	
HNGGG56	4298	733510	1-297	15-311	
HNGGG63	4299	576296	1-365	15-379	
HNGGG76	4300	576231	1-359	15-373	
HNGGHI38	4301	582695	1-330	15-344	H73720, AP000555, AL049388, Z85986, AC006130, AC005089, AL031282, AC006441, and U81831.
HNGGHI48	4302	576705	1-349	15-363	
HNGGH57	4303	576278	1-172	15-186	
HNGGHI64	4304	860426	1-410	15-424	

HNGGH74	4305	577192	1 - 332	15 - 346	
HNGGH78	4306	924908	1 - 419	15 - 433	
HNGGH95	4307	576214	1 - 330	15 - 344	
HNGGI08	4308	959639	1 - 316	15 - 330	
HNGGI52	4309	576270	1 - 352	15 - 366	
HNGGI58	4310	825371	1 - 103	15 - 117	
HNGGI81	4311	830081	1 - 274	15 - 288	H65090.
HNGGK31	4312	576259	1 - 58	15 - 72	
HNGGK53	4313	576253	1 - 296	15 - 310	
HNGGK86	4314	576247	1 - 313	15 - 327	AL023803.
HNGGK94	4315	576255	1 - 295	15 - 309	
HNGGL51	4316	576758	1 - 330	15 - 344	
HNGGM10	4317	964819	1 - 568	15 - 582	AC007766.
HNGGM41	4318	576284	1 - 356	15 - 370	
HNGGM56	4319	576219	1 - 356	15 - 370	
HNGGM67	4320	576220	1 - 367	15 - 381	
HNGGM76	4321	576287	1 - 286	15 - 300	AC005777.
HNGGM92	4322	576229	1 - 295	15 - 309	AC005325.
HNGGN03	4323	924578	1 - 347	15 - 361	AC006536.
HNGGN04	4324	576263	1 - 267	15 - 281	
HNGGN16	4325	576268	1 - 302	15 - 316	
HNGGN36	4326	708119	1 - 199	15 - 213	AW029269, AA077796, AI131261, H52283, AA496309, AI720943, AA666272, AA809179, AI617586, AW162303, AA629852, AW162047, AW161786, H86579, H30595, AA018923, AA012829, AI306717, H77442, W63553, T40629, AW084173, AW019964, AI038813, AI860535, AA946848, T06897, AI955029, AI332676, H30568, AW167909, AI357628, AI066646, AI037006, AI471476, AI475164, AW130427, AI755202, AA657910, R91633, AI833218, AI039309, AA424249, AI252828, AI254153, H79407, AI902426, AI254937, AA761036, AA774006, AI270149, AI251380, AI251949, AI252207, AA429481, AI251996, AI252979, AI254626, AI284684, AI251353, AI251298, AI255012, AA59866, AI254440, AW082076, AI251598, AI252933, AI223508, AI254658, AI241970, AW086319, AA665123, AC008009, AC005003, AI254673, AW086334, AI251976, AC004009, AI008715, AC008009, AC005881, U73330, AC002347, AI117258, AI111169, Z95331, Z83851, AC005765, AC000134, AC004801, AP001054, U47924, AC006312, AI049575, Z98946, AI022316, AC004797, Z93241, Z98044, AF042089, AI035685, AI008582, AC007981, Z83826, AC007993, AC015853, AC004542, Z98304, AP000052, AI023581, AC005190, AC005884, AC008372, AC005821, AI050318, AC005519, AC006057, AC006317, AC005666, Z775890, AP001050, AI023281, AI049570,

HNGGN64	4327	577319	1 - 413	15 - 427	AC009330, AC005235, AC005332, AC006255, AP000167, AC007528, AC003500, AL022314, AC007686, AL022162, AF095901, AC007934, AC005058, AL050307, AL035415, AL109627, AC006121, AL022238, AC005977, ZB9653, AC006367, AC005529, AC006946, AL032821, AC006014, AC002477, AC004858, AC006050, AC007878, AF139638, AC003972, U95737, AC002094, AC006581, AC007225, AL049759, AC005488, AC008928, AL078600, AC002543, AC004895, ZB3844, AC005510, AL031121, AL022326, AC006538, AC005606, AL079300, AC005480, AC004230, AL035588, AC007731, AC006950, AC005593, AC004685, AL079300, AL109984, AL021940, AC009542, AC007327, AC005089, AC000690, AC003358, ZB9716, AC005197, AC002289, AL031906, AC002115, AC006141, AC004982, AL035414, AC004003, AC005520, AC005041, AC005500, AC006238, AF109907, AC003865, ZB9128, AC008044, AL022313, AC004841, AC004882, AC002544, U90093, AC004491, AC007367, AC007435, AF196970, AC006111, AP000252, AL035072, AC004596, AP000134, AP002012, AP000030, AL109939, AC004796, AF030453, AC009247, AL009181, AC004896, AC002350, AC001070, AC006947, AC006515, AC004760, AC004617, AC004812, AL003147, AL031721, and ZB2444.
HNGGN64	4327	577319	1 - 413	15 - 427	AC004592.
HNGGN94	4328	967253	1 - 304	15 - 318	AL004592.
HNGG001	4329	916754	1 - 432	15 - 446	AL022315.
HNGG014	4330	860246	1 - 314	15 - 328	AL031279.
HNGG025	4331	576277	1 - 308	15 - 322	AC006013.
HNGGQ31	4332	576238	1 - 394	15 - 408	H71828, H71829, R97233, and R97234.
HNGGQ41	4333	712626	1 - 672	15 - 686	AB014078, AF000514, AC004209, and AC006139.
HNGGQ65	4334	576249	1 - 134	15 - 148	AL031033.
HNGGQ89	4335	577327	1 - 324	15 - 338	AA292029, H71258, H49211, T81141, R81151, AW085137, N58701, AA814092, AW244149, AC003007, AF001549, AC002045, AL078613, ZB9820, AC006000, and Z96074.
HNGGQ01	4336	916753	1 - 843	15 - 857	
HNGGQ10	4337	964815	1 - 241	15 - 255	
HNGGR17	4338	576250	1 - 215	15 - 229	
HNGGR43	4339	576246	1 - 453	15 - 447	
HNGGR74	4340	765698	1 - 244	15 - 258	
HNGGS09	4341	970861	1 - 386	15 - 400	
HNGGS26	4342	825369	1 - 398	15 - 412	
HNGGS33	4343	576305	1 - 414	15 - 428	AC005630, AC006328, AC004460, AC005154, and AC006312.
HNGGS41	4344	576308	1 - 64	15 - 78	
HNGGS66	4345	576312	1 - 401	15 - 415	
HNGGS67	4346	751781	1 - 248	15 - 262	
HNGGS73	4347	576740	1 - 391	15 - 405	AL034548, and AL035467.

HNGGS78	4348	576311	1 - 349	15 - 363	AA486885, AA582911, AA644207, AA522942, AA873560, AA523815, AA487858, AA595825, AW088202, R95704, AW104748, AW196796, AA719080, AA480790, AA488573, R91159, AA620464, AW080134, AW162049, AA504871, AW295531, AW339850, AW690003, AW38785, AW962050, AW567674, AA111909, AW440836, AW570261, AW133636, AW029003, AW173815, AW625244, AA482711, AA634146, AW679782, AW251436, AA634145, AW251002, AW2018, AA496260, AA837084, AA483068, AW890923, AW166815, AA115968, AW17271, AA550758, AA531372, AW09722, AW120674, AW6458, AW8438, AW768905, AA348929, AW368745, AW1696, AA151980, AW767376, AW29721, AW608626, AW190911, AW18421, AA312845, AA113186, AW0575, AW4075, AA159052, AA132833, AW06327, AW099892, AW119391, AW192470, AW23229, AA045894, AW714055, AW131034, AA826303, AA923516, AW088616, AA515051, AA663486, AA533725, AW78195, AA810370, AW79819, AW85382, AA079707, AW904894, AW17761, AW1281468, AA340747, AA303161, AA604854, AA548689, AW4276, AW358571, AW075511, AW300625, AA573020, AA837677, AW670468, AW493768, AW623002, AA492166, AW133130, AW670158, AA583955, AW419118, AW07736, AW521399, AA252763, AW079659, AW194761, AW525824, AA856858, AW491284, AA554319, TS6472, AW709005, AW630925, AA906889, AW682912, AW298710, AW649705, AW439558, AW171416, AW721981, AW43312, AW521323, AA644538, AA577906, AA469451, AW064864, AW10159, TS2733, AA6603156, AA0609022, AW97934, AW52296, AW728997, AA346458, AW7451, AW29989, AA708352, AA599920, AW365988, AW406755, AW156538, AA280632, AA630030, AA490183, AA765170, AW079101, AW193432, AA483223, AW982525, AW71543, AA602528, AW547286, TS3128, AW71481, AA644451, AA51503, AA635442, AA654771, AW970213, AA654761, AA352803, AA324164, AA653618, AA834755, AA338486, AW284640, AA370035, AA664015, AW06409, AW158229, AW15897, AA604869, AW28550, AA350859, AW57369, AW061334, AW491814, AW679514, AA145516, AA720548, AW568678, AW754955, AW79504, AW859742, AA115165, AA1199616, AA633582, AA446657, AW38987, AW825455, AW8421, AA569214, AW973803, AA134335, AA302963, AW299050, AW668578, AW041412, AW284179, AW158345, AA628042, AA513972, AA503283,
HNGGT144	4349	576297	1 - 313	15 - 327	
HNGGT146	4350	719127	1 - 307	15 - 321	
HNGGT155	4351	576302	1 - 350	15 - 364	
HNGGT157	4352	576301	1 - 246	15 - 260	
HNGGT158	4353	576299	1 - 362	15 - 376	
HNGGT62	4354	725750	1 - 117	15 - 131	AC006212.
HNGGV07	4355	953549	1 - 276	15 - 290	
HNGGV53	4356	576313	1 - 286	15 - 300	
HNGGV70	4357	781247	1 - 497	15 - 511	
HNGGV95	4358	795920	1 - 423	15 - 437	



HT9151, AA113861, AA781010, A1801600, A1679045, A1708009, A1804379, A1649642, H02877, AA568778, A1199853, A1683577, C75026, T29180, A1281881, AA394271, AW301350, AL079812, AW303196, AA908687, AW243960, H88666, AW274349, A1469624, A1173115, AA993656, AA639248, AA384881, AC010582, AC005585, AC007628, AC005484, AC007239, AC007542, AL034451, AL021578, AP000352, AC006518, AP000157, AP000114, AC006480, AF015160, U14694, AF015163, AF060568, AF001548, Z98950, AC000119, U17924, AC004832, AP000695, AF015166, AL033381, M63543, M63544, AC007911, AB020874, U91327, AL132987, AC007041, AF015171, AP001172, AB026899, AC007103, AC005589, AC004853, AF015170, AC005144, AC004934, AC009509, AC004542, AC004638, AC004408, AC002094, AC016026, AP000500, AF031078, AF030876, AF045555, U12580, AL021878, AF050666, AC009028, AC005530, AP000954, AC004785, AC004981, AC007917, AF015158, AB019438, Z97196, AF015162, U12582, X67277, AC005164, U59871, Z82214, AC005722, AC004861, AC009028, AC005530, AP000954, AC004785, AC004981, AC007917, AF015158, AB019438, AL031709, AP000563, AP000133, AP000211, AL021939, AC006000, AF015167, Z84478, AC007436, AC002477, AC008055, U12583, U50570, U14698, AC008126, AC004019, AC006352, AC005520, AC004692, AL031904, AC005552, AP000519, AC006511, AL049633, AF015169, AC004506, AC003303, AC006116, AC006538, AF064864, AC004675, AC005046, AC000052, AC007684, AC005799, AP000456, AF088219, AC003985, AC007228, AC007319, AC006296, AL031655, AF015168, AC002456, AL121748, AC004690, AB023056, AC006561, AF015161, AL022576, AC004613, S75201, Z99297, AC004593, AL035089, AC005399, A39972, AC007845, AC005684, AC006285, AC002451, AL096829, U14700, AL031653, AC002059, AP000193, AP000050, AP000311, Z73986, AL034400, AL049589, AP000117, Z99758, AC004885, AF015165, AC005527, AC005495, AC008062, AC005156, AC007558, AC004915, AC016025, AC007056, AC007193, U14719, AC005999, AL078603, AC005207, AC006150, AF164343, AC005529, AC004808, AC005040, AC006312, AC006371, AC003088, AL109733, AC005821, AC005154, AC005521, AL035461, AC004702, U14718, AC004492, AC002487, AC004417, AL049764, AC007250, Z68328, AL022157, AL022393, AL031905, AP000156, AL035695, AL049642, Z82211, AC004027, AC006011, AL135746, U12584, AC006548, AC002449, AP000080, AC007245, AF029308, AC005503, AC000372, AL035415, AF196779, AL117353, AC004825, AC003998, AL050318, U14712, AC006441, AL109842, AL031770, AC005901, AC007156, U12581, AL049869, Z84470, AL022477, X58156, AC006597, AC005091, AC004796, Z98941, AC007687, AL033525, Z95114, AC006036, AL078644, AC004884, Z69921, AC004385, AC005084, AC005018, AC000062, AC007870, AC004103, AC004592, L29074, L00352, M63005, M63480, AC007565, AC007360, AP000093, and AL008633.				
AC006482.				
HNGGX46 4359 868071 1 - 327	15 - 341			
HNGGX49 4360 860551 1 - 318	15 - 332			
HNGGX91 4361 576188 1 - 266	15 - 280			

HNGX93	4362	576193	1 - 263	15 - 277	Z64732.
HNGX95	4363	576222	1 - 279	15 - 293	
HNGHA08	4364	953539	1 - 399	15 - 413	
HNGHA10	4365	860553	1 - 584	15 - 598	AC005304.
HNGHA47	4366	576213	1 - 337	15 - 351	
HNGHA70	4367	576300	1 - 378	15 - 392	AA601995, AA565285, AW151732, AA551798, AC006960, AC002119, AF064860, AC005988, AC008372, AC005738, AB001523, AC006480, AL035658, AL096712, AL121655, AC003075, AC004259, AC004600, AP000358, AC006017, AC005089, AL021391, AC009516, AL096794, AL121603, AL034343, AC003681, AC004231, 282244, AL021877, AL035464, AC005730, AC007371, AB000882, AC006445, AL031289, AL020997, AC006111, and AC005914.
HNGHA77	4368	772279	1 - 447	15 - 461	
HNGHB07	4369	860552	1 - 372	15 - 386	
HNGHB31	4370	576306	1 - 537	15 - 551	AA458724.
HNGHB33	4371	506261	1 - 128	15 - 142	
HNGHB48	4372	463007	1 - 625	15 - 639	
HNGHB55	4373	733509	1 - 506	15 - 520	
HNGHB80	4374	576769	1 - 517	15 - 531	AL132987.
					AI920851, AA338474, T27234, AA326098, AW317023, R68640, AI818313, AA829693, AA370883, AA366269, AC006255, AC002350, AC007052, AF111167, AC009891, AL117258, Z75890, AL023281, AF179633, AL035470, AC002289, AL035698, AC006409, AL050321, Z99128, AP000210, AP000132, AP000248, AC006101, AL133246, AF152365, AC003045, AP000300, AP000045, AP000113, AC002543, and AC005027.
HNGHB91	4375	576215	1 - 515	15 - 529	
HNGHD04	4376	932099	1 - 327	15 - 341	
HNGHD09	4377	860544	1 - 394	15 - 408	U91326, and AC002544.
HNGHD22	4378	576314	1 - 303	15 - 317	Z83733, and AL049749.
HNGHD25	4379	506262	1 - 306	15 - 320	
HNGHD59	4380	836226	1 - 344	15 - 358	
HNGHD67	4381	576317	1 - 430	15 - 444	AC004520.
HNGHE07	4382	953540	1 - 333	15 - 347	
HNGHE17	4383	576209	1 - 330	15 - 344	
HNGHE52	4384	576197	1 - 312	15 - 326	AC002038, AC006352, AC002041, AP000543, AC006359, and AC002307.
HNGHE56	4385	577124	1 - 344	15 - 358	
HNGHE62	4386	576202	1 - 266	15 - 280	AA804653, AI089093, AH70199, AA757250, AI038529, AA654837, HI12636, AI612981, T61868, AA012846, AI658809, AA582114, AA115234, AA115354, AC009972, AL021330, Z93018, AC006924, AC006020, AL031684, AL121866, AL021182, Z70719, AC008013, AB023048, AP000511, AC002072, AF027598, Z83200, AC004474, AL034485, AL022153, AC007165,

					AC002327, AL021939, U78308, AC005864, U76377, AL023878, AL079300, AF095725, AL078599, AC019014, AL009029, AC009946, AL109659, AC005908, AC006952, Z74409, AC003015, AC002299, AC007685, AL033304, AC004103, AC004947, AC007159, AC004099, AL121593, AC006961, AC005613, Z82212, AC006036, AC005084, AC006432, AC005832, AL022154, AL031116, AC002067, U95743, AF003627, Z98046, AL133353, AC005875, AC005247, AC002122, AB020871, AP000695, AC007262, AP000696, AC004014, AC005048, AC006478, AL022401, AL035660, AL033521, AC005771, E05591, E05593, E05595, D10871, AL109830, AL021307, and AC004125.
					AP000024.
HNGHE69	4387	753107	1 - 503	15 - 517	
HNGHE95	4388	779951	1 - 198	15 - 212	
HNGHG15	4389	971736	1 - 382	15 - 396	
HNGHG22	4390	577414	1 - 326	15 - 340	
HNGHO56	4391	576230	1 - 353	15 - 367	AC005033, and AC006544.
HNGHG68	4392	576232	1 - 334	15 - 348	AC004536.
HNGHG71	4393	576218	1 - 346	15 - 360	AC002351.
HNGHG126	4394	924570	1 - 379	15 - 393	
HNGHK13	4395	577354	1 - 334	15 - 348	
HNGHK42	4396	582685	1 - 301	15 - 315	
HNGHK44	4397	576208	1 - 281	15 - 295	AI 050342.
HNGHK46	4398	576205	1 - 308	15 - 322	
HNGHK48	4399	576206	1 - 320	15 - 334	
HNGHK50	4400	576195	1 - 364	15 - 378	
HNGHK53	4401	576191	1 - 343	15 - 357	AL034343.
HNGHK68	4402	576207	1 - 192	15 - 206	AC006120.
HNGHK77	4403	772277	1 - 482	15 - 496	
HNGHL10	4404	964814	1 - 352	15 - 366	
HNGHL20	4405	973969	1 - 350	15 - 364	
HNGHL22	4406	576326	1 - 363	15 - 377	AC000067, AL021332, AL034548, AF064860, AC010197, and U95740.
					AI052117, AI057562, AI369836, AI360398, R84933, AI289003, AI870646, AA767953, AI672430, AW274266, and AI926637.
					Z54246.
HNGHL51	4407	576223	1 - 221	15 - 235	
HNGHL52	4408	576226	1 - 414	15 - 428	
HNGHL65	4409	576320	1 - 243	15 - 257	AC005375.
HNGHL76	4410	506269	1 - 348	15 - 362	AC005953.
HNGHL77	4411	772283	1 - 293	15 - 307	
HNGHM33	4412	576741	1 - 302	15 - 316	
HNGHM36	4413	576325	1 - 355	15 - 369	

HNGHN51	4414	713805	1 - 394	15 - 408	
HNGHN22	4415	421742	1 - 433	15 - 447	
HNGHN40	4416	576165	1 - 244	15 - 258	AL034402, and AL049871.
HNGHN42	4417	576111	1 - 237	15 - 251	
HNGHN52	4418	576681	1 - 341	15 - 355	AA393776, AI149821, AI339278, AA436071, AI125367, and AA397838.
HNGHN56	4419	733881	1 - 416	15 - 430	AI183881, AI085895, AI014092, AI023656, AI121588, AI132826, AI035900, Z94722, AL008627, AL021877, and AL033381.
HNGHN70	4420	576108	1 - 434	15 - 448	
HNGHN75	4421	576110	1 - 427	15 - 441	
HNGHN76	4422	576170	1 - 218	15 - 232	
HNGHN86	4423	783566	1 - 203	15 - 217	
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HNGHN93	4424	506259	1 - 342	15 - 356	
HNGHN94	4425	970856	1 - 423	15 - 437	
HNGHN95	4426	576127	1 - 426	15 - 440	Z96194.
HNGHO02	4427	920373	1 - 329	15 - 343	
HNGHO10	4428	964804	1 - 305	15 - 319	
HNGHO15	4429	576168	1 - 213	15 - 227	
HNGHO26	4430	420281	1 - 236	15 - 250	AC010168.
HNGHO28	4431	576173	1 - 361	15 - 375	AC007565.
HNGHO32	4432	575735	1 - 368	15 - 382	
HNGHO36	4433	576142	1 - 367	15 - 381	
HNGHO62	4434	840278	1 - 311	15 - 325	
HNGHO66	4435	576174	1 - 369	15 - 383	
HNGHP28	4436	576178	1 - 294	15 - 308	

HNGHP66	4437	576136	1 - 126	15 - 140
HNGHP74	4438	577357	1 - 192	15 - 206
HNGHP91	4439	576053	1 - 225	15 - 239
HNGHP95	4440	577335	1 - 412	15 - 426
HNGHQ27	4441	683507	1 - 331	15 - 345
HNGHQ43	4442	576262	1 - 429	15 - 443
HNGHQ55	4443	576144	1 - 237	15 - 251
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HNGH072	4444	576105	1 - 431	15 - 445
HNGH076	4445	770126	1 - 234	15 - 248
HNGH096	4446	723008	1 - 428	15 - 442
HNGHR04	4447	576196	1 - 435	15 - 449
HNGHR79	4448	576199	1 - 423	15 - 437
HNGHR83	4449	576210	1 - 426	15 - 440
HNGHT06	4450	935706	1 - 361	15 - 375
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HNGHT92	4451	576149	1 - 235	15 - 249
HNGHY07	4452	953531	1 - 380	15 - 394
HNGHY31	4453	577363	1 - 433	15 - 447
HNGHY54	4454	730769	1 - 312	15 - 326
HNGHY78	4455	576139	1 - 318	15 - 332
HNGHZ17	4456	860532	1 - 430	15 - 444
HNGHZ48	4457	576181	1 - 137	15 - 151
HNGHZ51	4458	716649	1 - 300	15 - 314
HNGIA19	4459	576269	1 - 433	15 - 447
HNGIA66	4460	576155	1 - 432	15 - 446
HNGIA66	4461	678887	1 - 430	15 - 444
HNGIC24	4462	934280	1 - 462	15 - 476
HNGIC67	4463	576177	1 - 297	15 - 311
HNGID03	4464	921946	1 - 249	15 - 263
HNGIDI1	4465	967226	1 - 338	15 - 352
HNGIDI5	4466	660299	1 - 432	15 - 446
				AL133216.

HNGID16	4467	576114	1 - 329	15 - 343	AC005072, and AF006752. Z68324.
HNGID33	4468	868069	1 - 110	15 - 124	
HNGID67	4469	751668	1 - 334	15 - 348	15 - 400
HNGID78	4470	576117	1 - 386	15 - 400	
HNGID80	4471	576120	1 - 352	15 - 366	15 - 210
HNGID89	4472	577358	1 - 196	15 - 210	
HNGID91	4473	577189	1 - 430	15 - 444	AC003976.
HNGIH02	4474	920362	1 - 339	15 - 353	
HNGIH56	4475	576122	1 - 233	15 - 247	15 - 274
HNGIH94	4476	576123	1 - 260	15 - 247	
HNGIH16	4477	576154	1 - 77	15 - 91	15 - 333
HNGIH47	4478	576156	1 - 175	15 - 189	
HNGIH50	4479	915340	1 - 319	15 - 333	15 - 381
HNGIH74	4480	576158	1 - 367	15 - 381	
HNGIH76	4481	576153	1 - 99	15 - 113	AL079339.
HNGIH85	4482	576102	1 - 274	15 - 288	
HNGIH01	4483	916748	1 - 345	15 - 359	15 - 348
HNGIH05	4484	925597	1 - 325	15 - 339	
HNGIH11	4485	964809	1 - 334	15 - 348	15 - 166
HNGIH59	4486	860526	1 - 311	15 - 325	
HNGIJ66	4487	576224	1 - 152	15 - 166	15 - 387
HNGIJ67	4488	506355	1 - 373	15 - 387	
HNGIJ96	4489	779901	1 - 436	15 - 450	15 - 252
HNGIK41	4490	712562	1 - 238	15 - 252	
HNGIK42	4491	713817	1 - 316	15 - 330	15 - 437
HNGIK77	4492	772230	1 - 423	15 - 437	
HNGIL27	4493	839552	1 - 500	15 - 514	15 - 451
HNGIL43	4494	715328	1 - 437	15 - 451	
HNGIM04	4495	615308	1 - 438	15 - 452	15 - 442
HNGIM46	4496	653221	1 - 428	15 - 442	
HNGIM76	4497	770078	1 - 263	15 - 277	15 - 355
HNGIM90	4498	788715	1 - 341	15 - 355	



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HNGIM02	4499	783495	1 - 245	15 - 259	AC007226, AC007216, and U95742.
HNGIN11	4500	964991	1 - 553	15 - 567	
HNGIN18	4501	666515	1 - 436	15 - 450	
HNGIN28	4502	860521	1 - 440	15 - 454	
HNGIO15	4503	660320	1 - 392	15 - 406	
HNGIO77	4504	576857	1 - 365	15 - 379	
HNGIP30	4505	577338	1 - 324	15 - 338	AL050318.
HNGIP39	4506	840215	1 - 340	15 - 354	AL633157.
HNGIP42	4507	860518	1 - 377	15 - 391	AW450501, AL444815, AL444830, and C20642.
HNGIP72	4508	575752	1 - 321	15 - 335	
HNGIQ28	4509	860510	1 - 422	15 - 436	
HNGIQ43	4510	715324	1 - 405	15 - 419	NS2389, and AC006487.
HNGIQ48	4511	720944	1 - 406	15 - 420	
HNGIQ66	4512	506352	1 - 345	15 - 359	AF001550.
HNGIR34	4513	719088	1 - 422	15 - 436	
HNGIR92	4514	524799	1 - 382	15 - 396	AA642060, AW021583, AA364701, AL471543, AA630362, AA320748, AW270382, AA302308, AA826880, AA121651, AA534010, AA535406, AA829106, AL625292, D25870, AW245747, AA508509, AA515549, AA310158, AA947547, AA584752, AL672135, AA338522, AA346692, AA384502, AA614069, AA584201, AL674873, AA482801, R65755, AA503600, AL343137, AL109842, AL008635, AP000230, Z83840, AP000144, AC004098, AC006251, AL022326, AC006430, AC009516, Z98200, AC002350, AC007488, AC004254, AP000330, AL021937, Z99716, AL121658, U95740, AL022238, AC010200, AC000052, AL022476, Z14320, AC002310, AL023807, X87344, AC004019, AC005412, AL080243, AC005041, AC005778, AC008372, AC005736, AC006111, AC005324, AL117694, AC004526, AC005280, AC007676, AL035079, AP000352, AC005251, U85195, Z25986, AL023284, AE000658, AC002985, AC005197, AL122003, AL031848, Z93017, AC008079, AC002045, AD000092, AC006271, AL109984, AL022318, AC005212, AL078581, AP0000356, AL121603, AF217403, AC007684, AC005181, AC016027, AP000553, AC016830, U91326, AB001523, AC006115, AC006449, AC006001, U95742, Z69919, AF055066, AP000556, AC007216, AL109837, AC005888, AC007193,

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HNGIS13	4515	575753	1 - 433	15 - 447
HNGIS30	4516	575758	1 - 387	15 - 401
HNGIT70	4517	953890	1 - 337	15 - 351
HNGIU55	4518	576804	1 - 356	15 - 370
HNGIU78	4519	666261	1 - 1165	15 - 1179
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HNGIV01	4520	913687	1 - 483	15 - 497
HNGIV24	4521	766775	1 - 198	15 - 212
HNGIV81	4522	777970	1 - 720	15 - 734
HNGIV70	4523	883086	1 - 572	15 - 586
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HNGIW73	4524	764456	1 - 345	15 - 359
HNGIY22	4525	674660	1 - 261	15 - 275
HNGIY36	4526	707123	1 - 182	15 - 196

HNGIV56	4527	868065	1 - 339	15 - 353	AA48018, and AB016816
HNGIV60	4528	740404	1 - 148	15 - 162	AA306200, H09834, and 299714
HNGIV79	4529	775229	1 - 518	15 - 532	AD68789, AL031297, and AL021155
HNGIV92	4530	792737	1 - 349	15 - 363	AC006465
HNGIZ26	4531	670962	1 - 388	15 - 402	
HNGIZ56	4532	733439	1 - 303	15 - 317	
HNGIZ69	4533	757599	1 - 423	15 - 437	
HNGIZ82	4534	668704	1 - 409	15 - 423	AI674585, and AW137161
HNGJAI5	4535	787570	1 - 959	15 - 973	AL110505
HNGJAI8	4536	666512	1 - 292	15 - 306	
HNGJB34	4537	936011	1 - 424	15 - 438	TI5352, AA586366, AA585098, AA585325, TI8597, AA170832, R29657, R45895, AA385101, D53161, Z32822, C15406, Z32887, D57491, D59751, R28735, R29445, AI5069, D61185, AI557718, AA583155, AI557740, AI525316, AA585378, AI557762, AI526184, R28892, AI557864, AI541356, R28965, AA585439, Z28355, AI526140, AI541365, AI525500, D60765, D54897, AA585379, D60844, D59436, R29218, C16294, AI526078, AI541517, AI557731, R28067, R28895, AI557727, AI541203, AI541355, AI546971, AI525556, C16315, Z33559, AA283326, AI541383, AA585476, AI546999, AI547250, AI557763, AI546875, D55233, AI540903, AI526016, AI547039, D61254, D53447, AI557734, AI557084, C16292, C15120, C15762, D54850, D52835, D53472, D51433, AI557787, AI541346, C16300, AI541013, AI535639, C16293, AI557807, AI525306, C16305, C15737, AI557809, AI541374, AA585356, D60730, AI557738, AI546945, AI525431, AI526191, AI557155, AI541034, AI547196, D59458, C16296, AI526194, AI557408, AI547202, AI541523, AI557533, R29179, Z30131, AI525339, D57186, AI526112, AI557602, AI546831, AI546921, AI541307, AI526109, AI546996, AI540967, AI546891, AI547006, AI526024, AI526117, D78224, AI525856, AI557279, AA585430, AI540974, AI535660, AI541321, AI541515, AA585453, AI525320, AI557808, Z36724, C14208, AI526176, AI541402, R29262, AI557852, R29172, AI541492, AI526113, AI526195, R29177, C16290, AI541527, AI546829, AI526158, AI526146, AI556967, T19407, AI546901, AI541516, AI557317, AI541510, AI525636, AI557786, T41289, AA5314191, AI557264, AI525332, AI557799, AI526180, AI557810, AI526187, AI546954, AI525286, AI525114, AI524904, AI557041, AA585117, AI547189, AI541423, AI541027, AI524891, AI525076, T41329, AA585434, C14210, D61060, C14322, AI541506, AI541415, AI239433, AP000543, AR038855, AR062871, A25909, Y09813, X82786, A85395, A70872, A70869, A85476, Y76012, AR037157, X81969, U87250, Z32836, AJ244005, Y16359, AR054723, AF082186, AR038762, AR031358, D50010, X55486, AR031365, D13509, AJ244004, A20702, AR062872, AR062873, A20700, D78345, A43189, A43188, AR017907, AJ244003, AJ244006, AR017826, AJ243486, AC005913, AR003381, A98420, A98423, A98432, A98436, A98417, A98427, AR008429, Z30183, A62298, AF213384, AR050070

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HNGJIB52	4538	724406	1 - 432	15 - 416	
HNGJIB68	4539	753060	1 - 371	15 - 385	
HNGJIC60	4540	723380	1 - 404	15 - 418	
HNGJIC66	4541	786924	1 - 339	15 - 353	
HNGJIC76	4542	739500	1 - 162	15 - 176	AC005915.
HNGJID15	4543	660312	1 - 201	15 - 215	
HNGJID61	4544	774154	1 - 737	15 - 751	
HNGJID71	4545	760397	1 - 428	15 - 442	AB022522, AB022521, A1012652, and AB012162.

HNGJID76	4546	670948	1 - 339	15 - 353	
HNGJIE16	4547	661976	1 - 366	15 - 380	
HNGJIE33	4548	795219	1 - 409	15 - 423	
HNGJIE40	4549	960003	1 - 380	15 - 394	
HNGJIE56	4550	669732	1 - 415	15 - 429	
HNGJIF26	4551	666504	1 - 399	15 - 413	AL096853.
HNGJIF65	4552	698487	1 - 575	15 - 589	AW293616, and AA661680.
HNGJIF73	4553	683440	1 - 395	15 - 409	
HNGJIF79	4554	775221	1 - 142	15 - 156	
HNGJIG15	4555	660308	1 - 421	15 - 435	AL021528.
HNGJIG37	4556	708703	1 - 376	15 - 390	
HNGJIG72	4557	970797	1 - 387	15 - 401	
HNGJIG89	4558	778294	1 - 240	15 - 254	
HNGJH09	4559	415566	1 - 292	15 - 306	
HNGJH11	4560	860350	1 - 435	15 - 449	
HNGJH35	4561	952237	1 - 337	15 - 351	AL045943, AL134524, AL042377, L26292, AF190465, AC007425, AC005520, AC002540, AL035420, U89387, AC006241, AC005911, AC005519, AL049557, AL031681, and AC005940.
HNGJH50	4562	666843	1 - 435	15 - 449	
HNGJH96	4563	953648	1 - 246	15 - 260	
HNGJI29	4564	690667	1 - 373	15 - 387	AC005058.
HNGJI35	4565	707328	1 - 375	15 - 389	
HNGJH42	4566	465160	1 - 405	15 - 419	
HNGJH54	4567	465159	1 - 369	15 - 383	
HNGJH71	4568	760393	1 - 412	15 - 426	AL124706, AA307598, T74524, AL1609972, AL755214, AL754567, AA658918, AL754105, AW328331, AA527209, AA654038, AA535216, AA643770, AL1380617, AW304699, AL612142, AA714110, AL251576, AW274191, AL066232, AA704393, AL12401, AL583466, AL583252, AL733647, AL187148, AA533545, H07953, AA223890, AA747757, AA084609, AA297666, AA515138, AA829036, AW275432, H53284, AL049630, W60522, AW275412, AL118925, B92629, AL446336, AW300749, AA720774, AA904211, AL733662, AL244157, AA877992, AW083678, AA513551, AP000496, AF085946, AL050341, AL031985, AC006071, AC003685, Z93017, AC005184, AL132987, AC006277, AC006312, AC005412, U67813, Z97054, AC005484, AC005800, AC002544, Z98750, AC006237, AC004167, L13176, AC006254, AL001053, AC002115, L24294, AL021707, Z93930, U91326, Z98884, AL080243, AL035387, AC003957, AC004972, AL021546, AL023553, AC007276, AL049872, AC004805, AL031281, AC005049, AF038458, U80017, AL133243, Z99943, AC006441, AL121658, AC004638, AL022336, AF111169, Z99495, AC004084, AL139054, Z94056, AC004534, AL008583, AP000501, Z93016,

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HNGJ177	4569	772215	1 - 344	15 - 358	W26162, and AL022721.
HNGJ183	4570	781213	1 - 400	15 - 414	
HNGJ182	4571	597096	1 - 447	15 - 461	T64224.
HNGJ151	4572	725702	1 - 110	15 - 124	
HNGJK04	4573	615288	1 - 393	15 - 407	AC002365.
HNGJK06	4574	915548	1 - 267	15 - 281	
HNGJK12	4575	970686	1 - 213	15 - 227	
HNGJK23	4576	707327	1 - 113	15 - 127	AC004856.
HNGJK29	4577	663954	1 - 162	15 - 176	
HNGJK42	4578	713810	1 - 387	15 - 401	AW274296.
HNGJK50	4579	860196	1 - 384	15 - 398	
HNGJK54	4580	730713	1 - 225	15 - 239	
HNGJK58	4581	736080	1 - 387	15 - 401	AA491767, AA714011, AA644090, AA302690, AL0243789, A1567676, AW236288, AL270476,

			AA365586, AA021429, AT42168, AA481887, AA130647, AW188869, AA368616, AI791408, AT791720, AT254779, AA570441, AA833896, AA481970, AI829531, T50694, AA833875, HA7461, AI002810, AI457408, AI24387, AW238341, AW020612, AA595661, R79396, N27751, AI128511, AI084348, AI679871, AA600368, AW302017, AA595661, R79396, N27751, AA130855, H80989, AA721645, AA525753, AI044966, AA565426, U60083, AC005821, AC002477, AI133448, AC004913, AC005409, AC004975, U89337, AC005399, AI031589, AC004659, L44140, AR036572, U91328, AI031681, AF045448, AC004983, AF023268, AC004878, AI049694, AC007785, AC006480, AI034423, AI080243, AC007151, AC005726, Z94160, AC006101, AF069489, AC005902, I34294, AI109963, AF064860, AC007226, AC003109, AC006111, AI035086, AC005971, AC004967, AC005049, AI008725, AI049780, AC006596, M87889, AC005519, AI133399, AC006511, AC002302, AC000085, AP001053, AP000704, AC005089, AC002126, AP000008, AC005291, Z95331, AI049576, AC005972, AC006071, AB020868, AC004851, AI022316, AC003108, AB004907, AC000024, Z93242, AC005529, AC003982, AI132712, AP000247, AC005028, AC006166, AC000073, AP000512, AC006241, AC000353, AI021878, AC006080, AI022476, AC004554, AP000330, AC005666, AI035671, AC005602, AC004150, AI117352, AC004686, AP000689, AC006077, AI031680, AC004985, AC005330, AC002558, AI034553, AC005566, AI035458, AI021407, AI022069, AC004007, AC003962, AC005952, U95740, AI022721, AB023051, AI022165, AC006040, AC005527, AC000159, AC004098, AC006013, AC002511, AI035681, Z83840, AC004647, Z85987, AI135783, AC006026, AC005069, AC004750, AC005513, AC002312, AI049636, Z68870, AI035455, AF165142, AC007242, AC005907, AC005796, AC004836, AC005568, AI035398, AI109623, AF111167, AI021397, AC005697, AI035420, AI135960, AI131016, AF031078, AI022327, AD000091, AP000047, AI035683, AI031311, AC005014, AC004854, AP001054, AP004861, AF030876, AI022320, AC004477, AB003151, Z98949, AC005764, AF165926, AP000143, AC006449, AC005736, AC006538, AI031587, AP000090, AC002350, AC004019, Z98752, AI031295, AI009181, AI034549, AC005067, AI096678, AC008115, AF124523, AP000115, AI008719, AC005670, AC000003, AC005899, AB023049, AI033538, AC007016, AC004525, AI133445, AC002303, AC004559, AC007848, AC006509, AC006530, AI110502, AF053356, AP000240, AI022313, AI117344, AF207550, Z86090, U95742, AP000346, AC005412, AC002984, AF195658, AI021707, AC005057, AC006012, AC005225, AF111169, X55448, AC004644, AC005306, Z98036, AC007011, AI133244, D87675, AC005564, AC005874, AF134471, AC005288, U91321, AI003147, AF196989, AI031846, AC005038, AC007227, U91323, Z82244, AP000248, AC005058, AI031584, AI021528, AI021391, AC006236, AC005229, AC007216, AI031662, AC003030, AI035414, AC016027, AC004883, AI034429, and AI049776.
			AI035106.
HNGJK71	4582	739233	15 - 380
HNGJK77	4583	732737	15 - 544

HNGJK89	4584	772218	1 - 336	15 - 350	Z98747.
HNGJL16	4585	661977	1 - 363	15 - 377	AI008137, AA644021, AA552280, AA320136, AP000502, AC006026, and AF134726.
HNGJL26	4586	681819	1 - 355	15 - 369	
HNGJL27	4587	725295	1 - 363	15 - 377	AA132777, AA809070, AI799864, AW076105, W22288, AI586953, AW192068, AA470553, AI288805, AA470607, and AA470506.
HNGJL60	4588	462981	1 - 427	15 - 441	AC007436.
HNGJL73	4589	783518	1 - 333	15 - 347	TS9857, AI057232, AA077670, AI056766, AA076992, AI683105, AI633727, AW439721, AA076966, AA077800, AI057266, AA491063, AA854897, AA703747, AA491139, AI125775, AA279111, AI580834, AA490952, AA430496, AA450019, AI038182, AA156779, H29782, AC004916, AC004987, AF109718, AI133216, and AC006328.
HNGJL76	4590	793537	1 - 596	15 - 610	AC007436.
					TS9857, AI057232, AA077670, AI056766, AA076992, AI683105, AI633727, AW439721, AA076966, AA077800, AI057266, AA491063, AA854897, AA703747, AA491139, AI125775, AA279111, AI580834, AA490952, AA430496, AA450019, AI038182, AA156779, H29782, AC004916, AC004987, AF109718, AI133216, and AC006328.
HNGJM20	4591	964800	1 - 439	15 - 453	AA679195, and AB002375.
HNGJM35	4592	707324	1 - 122	15 - 136	AA776881, AI961747, T70076, AI631548, AI198396, AI560937, C04802, AA650160, AI003674, AP005223, AC006453, AI049911, AC002038, AC002307, AP000544, and AP000543.
HNGJM82	4593	967328	1 - 848	15 - 862	
HNGJO10	4594	964678	1 - 395	15 - 409	
HNGJO35	4595	707329	1 - 390	15 - 404	
HNGJO45	4596	717069	1 - 394	15 - 408	
HNGJO73	4597	668997	1 - 348	15 - 362	AW151247, AA360082, AA610353, AA660295, F17549, R17793, AA862218, H11470, AW082006, AA910680, AW387775, AW387778, AA490951, AA588001, AA370455, T47970, AI791659, AA610588, AW387786, AI041749, AI133355, AA171130, AA062982, AA345064, R23873, AI031120, AC004787, AI008582, AP000331, AP000172, AP000057, AP000125, AB023050, Z97832, Z95329, U91326, AC002544, AI096763, AC007406, AI035458, AP000030, AC004228, AC004929, AP000251, AP000133, AP000211, AF020802, AI229041, AI133448, Z83844, AC005544, AB003151, D89870, AC004152, AP006689, AB020868, AC020663, U52112, AP000512, AP000687, AC006211, AF139813, AI117337, AC004854, Z75887, AC005829, AF003529, AC009247, AI049869, L78810, AC004596, AF111169, AI035659, AC007536, AI050348, AC004797, AC006064, Z94865, AP000151, AC010436, U95742, AP000009, AC007216, AC006121, AC004967, Z98884, AC007225, AC004973, AC005823, AP000302, AP000114, AP000046, AC007276, AI031846, Z93241, AC007676, AI031670, AC009069, AI035684, AC004777, AC006468, AI031311, AI080243, Y07848, AC006130, AC009026, AC002059, AI139054, AC005695, AF205588, AC008372, AF196779, U63721, D87675, AC005071, AC005291, AC005874, AF134471, AI034561, AC006456, AI050307, AC002115, AC002302, Z96090, AR004690, AC005377, AC005899, I05096, U80459, AI049737, AC000694, AI031291, Z94055, AC004089, AC003682, AC005011, AI133445, AI109801, AI022323, AC003025, AP000702, AP000703, AC004160, AC005231, AC006312, AP001046, AP000697,



HNGJIP03	4598	860363	1 - 419	15 - 433	AL133163, AF118808, AC005696, AC002347, AP001054, AC007160, AC005245, AC007024, AL022213, AP000511, AL031255, AC007436, AC005070, AL021393, U91321, M19364, AL133353, AL121652, AC004703, AL020997, AC006600, AP000553, AL031984, AC003982, and AC003102.
					RG1498, AA953553, AA450228, AT799264, AT719292, AA012998, AL696793, AW348539, AA601202, AC006019, AL031427, AF001548, AC005220, AL031846, AC002310, Z983304, AC005911, L35930, AF207550, AC004774, AC005800, AL096843, Z98044, AL049631, AC002559, AC005104, AC005072, AP000553, AL022330, AC004967, AC002470, AC004895, AL008726, AC004032, ZS987, AC004797, AL031291, L78810, AC002070, Z84480, AC004966, AL035415, AC005067, AC003047, AC000004, AC004702, AL121655, AL049832, AC004859, AC006195, AL050332, Z95152, AC005280, AC016830, L44140, AL133445, AC006312, AC005670, AC005089, AC004526, AC004491, AC012152, AL031662, AL024308, AC000403, AL251973, Z68886, AF020662, AP000696, AC005037, AC002364, AC000396, AC008043, AF135187, AP000152, AP001069, AC004685, AC006948, AC002288, AC004703, Z81365, AC005875, AC005102, AL109865, AL109798, AC006138, AC007064, AL035413, Z83820, AC004755, AC004929, AC004813, AC005612, AL031229, Y18000, AC005529, AC005071, AL031733, AC006160, U95740, AL022721, AL009172, AC006449, AC004382, AC007073, AL096701, AC005252, AC004000, AC005215, AL117391, AC006378, AC005969, AC007263, AC008038, AL031587, AC008372, AC007371, Z84466, AC003695, AC002091, AL034420, AC016027, AP000513, AC003962, and AF064861.
HNGJIP10	4599	964568	1 - 662	15 - 676	
HNGJIP80	4600	766278	1 - 432	15 - 446	AC006571.
HNGJQ14	4601	881542	1 - 356	15 - 370	
HNGJQ23	4602	789764	1 - 476	15 - 490	
HNGJQ25	4603	924652	1 - 488	15 - 502	
HNGJQ35	4604	707326	1 - 376	15 - 390	
HNGJR01	4605	916555	1 - 542	15 - 556	AA342681, AA581914, AA775049, T48872, R26134, AT754955, AA441788, AA551798, AT560514, AA077776, AA464674, AA649642, R92640, AA662974, AA663306, AA45815, AL049996, AW268190, AW265634, AB78792, AL037910, AA483655, AA649553, AA555298, AW021917, AT597832, AT284108, AA780929, AL128592, AA577732, AT45695, AT114752, AT862716, AT865513, AA809189, AA437402, AT284640, AA482896, AA121919, F29989, AA487542, AA167741, T94094, H58472, AA720732, AW188976, R83838, F23255, AA161181, H64777, AW339622, AT043378, AL036854, AW088038, AA747472, T40612, R32200, AA614010, C14692, F17700, AL120245, AA296839, AT865988, AA527730, AW268277, AT885572, H84359, AT241705, AW337454, AW271904, AW189068, AW440633, AT524540, AA501614, W01999, AA516047, T40617, T52478, AA584489, AT079129, AA679872, AT453233, AA595625, AA747375, AA904275, AA515350, AA557879, T47739, AT160117, AA593471, R82388, T06828,

AW082744, AI889923, AA311071, AI768952, AA968509, M78007, AI135405, AA846981, AA448838, AA013436, AA603323, AA579278, H57846, T40077, AI821044, AI859534, AI538812, AI888405, AA602230, AI270475, AA664604, AI679713, AA603523, AA533408, AI952900, AA384039, H62778, AI297968, AW407919, AW079809, N45421, AI291371, D78979, A W021583, AI568683, AA745582, AI653244, AA501784, T71936, AA225585, AA551386, AA326410, AA298386, AI708005, AI120976, AA342189, AI251002, AA016286, AI053786, AA857296, N23097, AA483583, AI045709, AI634323, AV069450, AV238016, AI148927, AI445592, AI251111, AA528500, T53607, D44743, T32050, AA122223, AA744001, AA745524, AI908093, AA467988, AA714956, AI135643, AA365586, AA468051, R19647, AI471691, AI167154, T54898, AI053672, N64587, AA076427, AI679413, T47588, AI588089, H29019, W01998, AI754013, AC009501, Z85996, AP000503, Z95331, Z82182, AC004675, AI031596, AF088219, AC004231, AF134726, AC004982, AC003664, AL031120, AC007033, Z99572, Z99570, AC007262, AC005071, AC003101, Y11312, AI049712, AC004099, AI021977, AC006277, AC006479, AI035413, AF001549, AI021397, AI034429, AF003529, AC004649, AI031775, AI022327, AC010077, AI049745, Z96568, AC005531, AC003992, AC005632, AP000347, AC005856, AC008249, AF051976, Z82180, AI109985, AC005037, Z97630, AP000350, AC005841, AI035089, AC005057, AP000306, AP000047, AC002036, AC005701, AC005488, AC006057, M37551, AC004042, AC005212, AP000193, Z93241, AP000050, AC007254, M87914, AI132992, AI121653, U73168, U91319, AC005252, S42655, AP000117, AC005180, M19482, M27132, AC005381, AC004762, AC004024, AC005753, AP000115, M87919, AC004000, AC005940, AF084198, AI031845, U07562, AF003626, Z99755, AC002347, AI022162, AC005042, AC007308, AI122126, AC002468, AI049653, AC004892, AC006014, AC0016831, AC005944, AC007030, AC002070, AI121754, L44140, L81690, AC004263, AC004390, AF052684, AF039401, AC003101, AC004839, AC005366, AI031075, AI049699, AI008729, AC005529, AC004805, AC006257, AP000966, AC006372, Z95114, AC005520, U96629, AC007312, AI049869, AP000556, AI079339, AC004067, AC007161, AC004221, AF126483, AC004002, AI096803, AC005243, AC005207, AP000049, AI020993, AC002316, AB079555, AI022317, AC005160, AI049830, AI049569, AC005694, L17418, AP000311, AC002115, AI031003, AI109802, AC006441, M87918, AP002060, AI034555, AP000099, AP000216, AP000884, AP000036, AC004692, AI031432, AB019534, AI117352, AF048728, U73643, AI031393, AC006132, Z99290, AI020990, AC005064, AI035701, AC007237, Z84484, AI035455, AI031655, AC004816, AC007637, AC008085, AC005297, AC005358, AC005740, AI135744, AC002365, AC005291, Y18000, D87675, AC006388, AI133304, AC007377, AI121657, AP000356, AC005162, AI096678, AI096817, AC004130, AC004682, AC007182, Z99716, AI139054, AP000346, AB009813, AI133233, AC005666, AC006017, AC004514, AC009464, T34294, AC005565, AC007011, AC005339, AP000076, AC004902, AC004519, AI109984, AC006443, AI133382, AI022329, L78810, AC004596, AI031985, Z49866,			
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HNGIS24	4606	677235	1 - 319	15 - 333	AL022147.
HNGIS45	4607	720746	1 - 121	15 - 135	
HNGIS53	4608	728258	1 - 432	15 - 446	
HNGIS64	4609	746606	1 - 409	15 - 423	
HNGIS91	4610	920755	1 - 415	15 - 429	
HNGJT36	4611	888329	1 - 432	15 - 446	AC002483.
HNGJT72	4612	775502	1 - 371	15 - 385	
HNGJT93	4613	792338	1 - 332	15 - 346	
HNGJT95	4614	953418	1 - 345	15 - 359	
HNGJU36	4615	708122	1 - 638	15 - 652	AL133216, and AC004883.
HNGJU50	4616	724416	1 - 399	15 - 413	
HNGJU51	4617	725703	1 - 287	15 - 301	
HNGJU78	4618	860347	1 - 420	15 - 434	
					AL345721, AL1640679, AA547976, AL187148, AL281622, H90688, AL360076, AL633776, AW407007, AA230155, AA515742, AW157173, AA523719, AW302078, AA584756, AA984920, TS2745, AA362440, AA492264, AL134216, AA515451, AL043745, AA632593, AW328331, AA584527, AW328330, AA354507, AL096738, AA572813, T12424, N69313, H94979, AA630947, AW242279, AL380617, R98835, R94909, AL570019, AL112864, AW162314, AA833346, N87333, AL884404, AW162332, AA564925, AA196287, Z98884, AC009363, AC007056, AC005225, AC004035, AC005362, AL023553, AC006241, AL035411, AC005412, AF044083, Z97054, AC005667, Z97632, AC005695, AC005237, AC007450, AC004485, AC004106, AC004098, AC005841, AP000116, AP000049, AP000311, X96421, U89335, AC003666, AC000052, AF102137, AL035462, U95739, AC004922, AC004683, AC004638, AC003070, Z85986, AP000350, AC005325, AC006581, AL078621, Z92542, AF111168, AL008719, AC004757, AB028668, AC005962, U91318, AC006274, AP000235, AP000213, AP000135, Z86090, AP000031, AL078638, AL133445, AC000393, AC005553, AP000210, AP000132, Z84469, AC004859, AP000248, AC005971, AF143866, AB007914, AP000300, AC004834, AC002036, AP000045, AC005091, AC005215, AC003684, AL049569, AC002429, AC004262, Z83819, AL035458, AL135745, AC007114, AL035460, AC005666, AC009044, AC007540, AC006450, AC006040, AC006088, AL031432, AL022394, Z94056, AC003030, AC007536, AC005846, AC006576, AC004941, AL022313, Z95331, AC001231, AC005993, AC020663, AL035405, AC006487, AF064105, AF165926, AL118503, AL117330, AC005328, AL023801, AC005793, U62631, Z88756, AC004643, AC005783, AL022302, AC004802, Z98749, Z98051, AC005002.

				AC005518, AC002538, AL031293, AF196969, AC004933, AL035413, AC009721, AC004216, AF196779, AC004531, AL109758, AC004019, AC006277, U93305, Z84718, Z98752, AC000115, AL050341, Z85987, AL034420, AF0000351, AC002310, AL050350, AC002430, AL049589, AC002472, AC002544, AC007384, AC006549, AC005089, AC005736, AC002470, Z98946, AC007182, AC002544, Z98882, AP000268, AC004013, AL096774, AP000103, AP000033, AC009308, AF030453, Z98882, AP000268, AC004013, AL096774, AP000103, AP000033, AC004033, AC007227, AC008064, AC005409, AC005071, AC005792, AL049699, AC004961, AC004466, AL035690, AL009031, AC005482, AL035455, AC002326, AC004009, AL109627, AP000113, AC005933, AL035447, AC006237, AP000223, AP000104, AL008715, AP000692, AC004230, AC008116, AL049792, AC004900, AC003950, AC007283, AF118808, AC004241, and Z95115.
HNGJV04	4619	615283	1 - 210	15 - 224
HNGJV10	4620	964672	1 - 402	15 - 416
HNGJV91	4621	790213	1 - 235	15 - 249
HNGKA62	4622	876593	1 - 508	15 - 522
HNGKB11	4623	966119	1 - 516	15 - 530
HNGKB25	4624	944424	1 - 706	15 - 720
				AA121830, AA402301, H38504, AA227281, and AL050037.
				H53110, AW419161, AA551509, AA878495, AA345333, T07346, TS1743, AA525407, H81732, AA658235, AA441788, AA773289, AA134367, AA428414, AA583579, AA602557, AL158343, AA335519, AL166802, AA679493, AW062724, AA583568, AA723017, AL052786, AL070786, F53113, AA301813, T44592, AT446464, H68343, AT753037, AL042213, AA508509, AA171941, AI037897, AW327868, AA932099, T48872, AI439360, AI246796, AA525331, AA557686, AA658018, AL045455, AI335963, AA653964, F00949, AI016704, AL109798, AP000692, AL021579, U02050, AL121603, AC005288, L78833, AC002425, AC004741, AL035684, AC005088, U27336, U27334, AP000555, AC008498, Z98941, AF131211, AC004682, AC004536, AL049569, AC004736, AC006463, AF030453, AB016897, AL050312, AC001228, AC004856, AF196971, AP000315, AP000885, AC005102, AL133448, AP000359, AL121653, AL034379, AC005786, AL133245, AC004158, AP000501, AP000115, Z97056, AP000045, AL035086, AC002301, AL135879, AL121790, AP000089, AP000165, AC006449, AL022316, AC005215, AL135960, AL131016, AP000193, AC004792, AC004985, D16583, AL031846, AL109984, AC004030, AC008040, Z99755, AL022238, AF024533, AC004451, AP000117, AP000310, AF050154, AP000050, AL031733, Z82185, AC006455, Z85986, AP000117, AP000310, AF050154, AC005972, Z68287, AC020663, AL031905, D87675, AC004383, AC005695, AF190465, AP000118, AF124730, AL009031, AL049832, AC005911, AC002326, AC004129, AL035659, AC007686, AC006561, AL008629, AC005306, AC007199, U75931, AC001602, AL031053, U95742, AC004814, AC002310, AL022574, AL117258, AC004168, AC005375, AL121578, AC002091, AC006160, U66059, AC004678, AL008718, AP000553, AL133163, AC005225, AL079340, AC003695, AC002527, AL022721, AC005837, AC007021, AL035681, AC007157,

					AC008989, AC005944, Z99496, AC005041, AC005184, AC007216, AP000959, AC002554, U27337, AC008055, AL022339, AL035604, AC018359, AC006237, AC002565, AC006116, and AC005082.
HNGKB78	4625	971110	1 - 760	15 - 774	
HNGKB93	4626	791760	1 - 291	15 - 305	
HNGKD55	4627	860343	1 - 588	15 - 602	
HNGKD94	4628	793414	1 - 553	15 - 567	
					AW270385, AL355246, F35684, AA714011, AL355103, F23338, AA484892, AL280951, AL190648, AA831408, AS03142, AL185394, AA664126, T47138, AL1310992, AL280818, AA158549, AL170170, AA857812, AW272815, F34506, AA769141, AA846822, AA558404, AL761677, AW104163, H79586, AW069227, R67701, AL1310464, N85711, AL625604, AA568314, AL041373, AW419389, AL362442, AL537995, AL536858, AL130709, AA534208, AL869786, T03412, H29914, AL572680, AW151018, AA654482, AA334695, AA669961, AW237905, AA018231, AL188742, AW272640, AA182731, AA809186, AW023111, AA568204, AA570740, AA582746, AA483606, AA525695, AL634187, AA314891, AA347382, AW008169, R83068, H67064, AA573000, H13120, Z30294, AL431513, AL457313, AA668587, R93919, R79255, AL278972, AW002831, AA491767, AA458534, AL288033, T94394, AL189682, T50676, AL285493, AA878407, AA856841, T05617, AA600202, AW302017, AA553594, AL620992, AW162750, AW192402, AC004883, AC005971, AP000117, AC005280, Z95152, Z98304, Z94056, AC004973, AC006344, Z86090, AC004033, AL109627, AC005551, AC003381, Z81357, AL035588, AL096773, AC005722, D88268, AF134726, B4294, AC004893, AC005237, AF207350, AC004878, U73330, U82828, AC006388, AL035659, AC005821, AP051976, AC007546, AL022326, AC003070, AC005089, AC004150, AL049759, AP000696, AC007193, AC011311, AP002223, AL021393, AL096701, AC004963, AC007283, AL021808, AC005378, AL035562, Z92546, Z98750, AC005216, AC004983, AL031255, AE000662, AB015355, Z93241, AC007567, AB016897, AC002400, AP000049, AP000116, AC004522, AC002425, AL049776, AP000500, U62293, AF047825, AP000311, Z85996, M94081, AC002551, AC008126, AC005057, AC006536, AF217403, AP000337, AP000216, AC004881, AC004771, AL031597, AL080245, AC005183, AL049748, AC006125, AL035695, AP000503, AL049834, AF129756, AC006057, AC004417, Z83820, AP001549, AC005317, AP001063, AL078611, AC004253, AL035405, AC006071, AP001550, AC007308, AC006441, AC006116, AC005206, AC005391, AC002470, AP012723, AC004943, AL031228, AL080243, AC004955, U63721, AL117340, AL031670, AP000555, AC005667, AC007030, AP000010, AL031659, Z98200, AL121852, AL117355, AL031005, AL121769, AC004974, AP000359, AP000353, AD000684, AC002128, AC005071, Z98152, AL035420, AL034417, U52112, AF075098, AC006360, AC000393, AF037338, AC006060, AF097738, AP000103, AL022327, AC005779, Z97630, AL050321, AL033517, AL121652, AC005793, AC004929, AC006480, AC005225, AP000502, AC002351, AL024509, AL031295, AC004831, AC006241, AL022311, AL117337, Z94801, AP000565, AC006061, AC005866,

	4629	860320	1 - 529	15 - 543	AC006285, AC004400, AL031257, AL008710, AC006121, AL031283, AL008726, AC005086, Z97054, U73643, AP000345, AC005777, U83195, AL109827, AC004778, AC004686, AL035684, AL117694, AC006019, AC004381, AC004020, AC005088, AC003071, AC007182, AC002517, AL022302, AC004675, AL031681, AF205388, AL008725, U51561, AL022320, AC002563, AC007785, AC005412, Z83847, AC020663, AL133312, AC004663, AL031685, U02068, U73637, AC003035, AL049832, AL0096712, Z97053, AC009363, AL034402, AE000653, AL022316, AC007371, AC007216, AC007199, AC003030, AC007878, AC006133, Z98036, AL022158, AL031680, AC007021, AC004000, AC008071, AL022313, Z93244, AC005049, U63630, AL117352, X99832, AF088219, AP000114, AF015416, AC009946, AC005261, AL021807, AL246003, AC000385, Z49236, AL133382, AC005516, AL049591, and AC002295.
HNGKE05					AL133265, AL801482, AL963720, AL370074, AL370094, AL284640, H71429, AW193265, AA610491, AW088718, AL119691, AL249997, AF086009, AW327868, AL431303, AA483223, AL046609, AL312309, AL041690, AA101689, AW021583, AA469451, AL355206, AA569471, AL334443, AW303196, AA652057, AL345654, AL044858, AL307608, N75702, AW249224, AW301350, AW274349, AA720702, AL042420, AL270117, AL305766, AA665330, AL138455, AA192747, AW304584, AA877817, AA490183, AW439558, AW265170, F36273, AL046205, AL079643, AA587256, AL305547, AA649642, AL809928, AW265393, AL368256, AL254615, AL890570, AL133164, AW020340, AL956131, AL888518, AL047427, AW103758, AL110770, AA525416, AL754658, AW088846, AA847499, AA493471, AA551503, AL350211, R24205, AL037683, AL048925, AL613280, AW276827, AL246119, AW408717, AL178953, AL192740, AA747105, AL044940, AL357288, AL568678, AW023672, AA679124, AW276817, AL061334, AA640900, AL962050, AL394271, AL919265, AA526787, AL814735, AW073470, AL133102, AW410400, AL491814, AL042753, AA468131, AA521323, AA581903, AA468022, AA587604, AL344695, AL281881, AL570261, AL064864, AL457397, AW004911, AL345681, AL345675, AL345518, AA834792, AA503475, AL131166, AL561060, AL679782, AA214342, AL348643, AA623002, AL890348, AL368745, AL732764, AW029038, AL149478, AA631507, AL589230, AL289067, AL653618, AW340844, AW265385, AA521399, AL341664, AW276435, AL345157, AA470969, AL038705, AW193432, AA810318, AL224093, AL045053, AA758934, AA486559, AA473943, AL801600, AL610159, AA559290, AL254316, AL344884, AA584581, AL669453, AL688846, AA669840, AL801591, AW261871, AL4908687, AL619997, AW236278, AL610271, AL375710, AL039958, AW419262, AL037554, AL471481, AW070892, AL286905, AA601492, AA846935, AA503154, AL120269, AL085719, AW162049, W31373, AL928790, AW295231, AA225230, AW248803, AL053672, AA309841, AL307201, AL076616, AA661948, AW270270, AA601371, AL040130, AW269488, AL642425, AA601355, AA482806, AA828712, R71981, AA583955, AA094275, AW148792, N48230, AL120502, AA806796, AL119984, AL171582, AA205915, AL046457, AW148256, AW072587, AW072923, AL744995, AA665021, AL859742, AL138421, AL679132, AW086816, AA545291, AL580652, AW008317, AL053790, AA680243,

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HNGKE07	4630	952221	1 - 348	15 - 362	AA633727, AA703747, U057232, AL041975, A0777343, AL042361, AA703958, AA317624, A1880143, A0883243, K96964, W03215, H06060, AA491139, A1214163, A0070680, AA084739, A1880175, AA078180, A0071670, AA211922, AL040165, H00289, AA077800, AW264118, T59857, AC004916, AC004987, AL133216, AC006328, and AF109718.
HNGKE52	4631	812714	1 - 575	15 - 589	AP000522.
HNGKE73	4632	860312	1 - 664	15 - 678	

HNGKE89	4633	786257	1 - 522	15 - 536	AL139228.
HNGKE91	4634	789685	1 - 535	15 - 549	AC004263.
HNGKE93	4635	791623	1 - 462	15 - 476	
HNGKE01	4636	915247	1 - 359	15 - 373	D80038, C14389, D59467, D80227, D80195, D80164, D59275, D59502, AA305578, D80269, D58283, D51423, D59610, C14331, D59859, D80222, D80166, C15076, D59619, D80210, D80391, D80240, D80253, D80043, D59787, D81030, D80193, D80376, D59612, D59979, D80196, D80188, D80025, D59927, D57483, D80241, D80366, D50995, AA305409, D59889, D51022, D80024, D80045, AW177440, C14429, AW178893, AA514188, AA305409, D81026, T03269, D80248, AW179328, C14014, C75259, AW378532, D80572, D80251, AW360811, D80133, D80134, AA514186, AW178762, AW177501, AW177511, D58253, D51250, AW369651, AW178775, AW375405, C05695, D80132, AW352158, D80268, AW376671, F13647, D59655, D52291, D80302, AW352117, AW366296, AW176467, AW360844, AW360817, AW375406, AW378534, AW179332, AP010186, AW377672, AW179023, AW178907, D80168, D80439, D80247, C14227, AW352170, AW352171, AW377676, AW177731, AW178907, AW178906, D81111, AW179019, AW179024, C14298, D59373, D80064, AW177505, AW360841, AW179020, AP058536, C14407, AW178909, AW177456, AW179329, AW178980, D51103, AW177733, AW378528, AW178908, AW178754, AW179018, AW352174, T11417, AW367967, AW179004, D80157, AW179012, AW178914, Z21582, AW378525, AW378540, D51759, AW177722, AW17728, D51097, AW179009, AW178774, AW178911, AW378543, D58246, AW352163, AW360834, D59503, C14077, AW178983, AA285331, T48593, AW178781, AW352120, D58101, D59627, D80258, D59653, A0557751, D45260, AW177723, AW178986, A1535850, AW378533, C14975, AW367950, AA809122, AW177508, D80014, H67854, C03092, D45273, H67866, A1525923, D51213, AW177497, T03116, D59317, D60214, D80228, A1525917, C14344, C14973, AW177734, A1525920, A1535686, D51221, T03048, D59474, D59551, D60010, AA514184, A1525227, A1557774, C14957, C14046, A1525242, A1525235, A1525925, A1525912, A1525215, A1525237, AW378542, AW378539, A1525928, C16955, Z33452, C05763, T02974, T02868, A1525222, AW360855, A1535961, D31458, A84916, A1132110, A62300, A62728, AR018138, AF058696, AR008278, AR028859, X67155, Y17188, D26022, A25909, A67220, D89785, A78862, D34614, B2448, D88547, Y12724, A82595, X82626, AR060385, A94995, AR002449, AR025207, AR016808, AR008443, I50126, I50132, I50128, I50133, AR066488, AR016514, AR060138, A45456, A26615, AR052274, AB012117, AR066482, AR066490, X08127, Y09689, A43192, A43190, AR038669, I18367, AR066487, I14842, A30438, A85396, A63271, AR054175, U87320, A85477, I19525, A86792, D50010, Y17187, D88507, X93549, A44461, AR008277, AR008281, AR008408, AR062872, T09867, AR016691, AR016690, U46128, T13509, T95111, A64136, A68321, AR060133, AF135125, U79457, AF123263, AR032065, U87247, X95535, and AR008382.
HNGKE11	4637	965047	1 - 473	15 - 487	D80045, T18597, A1536138, A1535660, A1541365, A1535639, R29657, AA585439, AA385098, D80045, T18597, A1536138, A1535660, A1541365, A1535639, R29657, AA585439, AA385098,



AA585325, R45895, AW366296, A1557084, D59436, A1541205, R28735, R29445, A1557864, D59751, A1525500, A1557262, D58283, AW375405, R28892, A1557731, A1541356, A1562678, A1525556, Z32887, A1557317, D80043, A1541510, D80166, AA585101, R28965, R28967, A1005856, AA170832, D80022, D80391, D59787, R29218, C14389, A1541535, D80196, AA585476, AA585329, R28895, D80253, D57491, C14331, AA585155, A15547189, D80522, Z32822, AA283326, D80188, D59467, A1525302, D59859, D80195, A1557740, D51423, D59619, D80210, D51799, D80164, D59275, D80240, D80366, D80227, A1526187, D59502, D81030, D59979, D80212, A1541346, D80219, AA585378, D57483, A1557807, C15076, C15406, D59927, D53161, D80269, D61185, D59610, D80038, AA305409, D51022, D59889, D50995, D80193, A1557408, Z28355, D80024, AA305578, A1526140, A1557602, A1557808, A1526158, D80378, C14429, C15069, D60844, AW177440, D81026, D80241, D51060, A1557155, C14014, AW375406, A1526184, A1540974, D80251, A1557852, A1546971, D60765, T48593, A514188, AW178893, C14210, D80248, AW360811, D54897, C75259, C16315, T03269, A1526176, A1541383, D61254, AW179328, A1541517, D53472, AA514186, A1541034, D80133, D80247, C16293, A1546875, A1557721, A1557787, A1557763, A1540903, A1557734, AW178762, A1547230, AW378532, D55233, A1523856, A1546999, A1524891, Z33559, A1526016, D80132, D80439, D58253, C16300, A1547039, D53447, A1535686, AW177501, A1547196, AW177511, A1524890, A1525306, D30843, A1541374, AW377671, AW360844, AW360817, C16294, A1536070, A1557533, A1557718, C15120, AW378534, A1541013, D80134, AW179342, AW377672, AW179023, AW178905, D52835, D80268, D51250, A1541515, AW176467, A1546945, A1525431, C16292, A1546829, AA585356, C16305, AW178775, AW369651, C05695, AW352170, D80168, D80302, A1546855, D52291, T11417, C15762, AW352171, AW377676, AW177505, AW179024, AW177731, AW352117, AW178907, AW378523, AW179019, C14227, A1526194, AW352158, D51103, F13647, AW178906, A1547158, AW360841, D78224, A1525339, AW179020, D80157, A1546921, A1557738, D59373, AW178909, AW177456, A1546996, AW178980, AW179329, A1540967, A1526191, A62298, A82595, AR038855, A62300, U87250, A84916, AR018138, I19525, Y17188, AR062871, AR008429, A85395, A85476, AR016808, AJ132110, A94995, A25909, AR008278, AF058696, AB028859, Y17187, AR031365, AR016514, Y09813, U94592, X67155, A1244007, D26022, A43190, A67220, D89785, A78862, D34614, Y12724, A70872, D88547, AR060385, AB002449, A70869, AR038669, AR037157, A44171, X82626, B2448, A30438, I50126, I50132, I50128, I50133, AR008443, AR031358, AR020207, AR066488, AR060138, A54556, A26615, AR052274, AR050070, AF135243, Z30183, D50010, AF06072, D13509, Y09669, A43192, AR066487, AR034175, X82786, AB005666, A82393, AR062372, I14842, AR066490, AR017826, AB012117, I18367, A63261, A70867, X68127, AR008277, AR008281, AR008408, AR016691, AR016690, U46128, A85396, AR066482, A85477, A86792, X76012, A64136, A68321, AR060133, D88507, AF213384, I79511, X93549, X82834, AF123263, L36913, AR032065, U79457, and AR008382.
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HNGKF83	4638	780453	15 - 622	AA766221, D51799, AA305409, D59859, D59610, D59619, D80210, D80240, C14389, D51423, D80166, D80253, C14331, D80439, D81030, D80219, D80195, D58283, D80212, D80366, D51060, D80188, D59467, D80248, D80022, D80227, D80391, D80164, D59275 D80043, D59787, D59502, D80241, D80038, D80269, D57483, C14014, D59889, D81026, D50995, D80196, D80133, D51022, D50979, D80024, D80268, D80522, D59927, D80247, AA514186, C15076, AA305578, D80193, D80045, AA514188, D80251, D80378, AW360811, C1429, AW177440, D80302, AW178893, D80157, V75259, AW377671, AW375405, D51103, T03269, D51759, AW178906, AA366296, AW179328, AW360844, AW378534, AW360817, AW375406, AW179332, AW377672, AW179023, AW178905, AW378528, AW178762, C06593, AW378532, D59373, AW176467, AW177501, AW177511, T48593, D80134, AW352171, AW377676, D59663, AW352170, AW177731, D80132, AW1778907, AW179019, AW179024, D58253, C06015, D51250, AW178983, D45260, AA560841, AW177505, AW352120, AW367967, AW179020, AW178775, AW369651, AW178909, AW177456, AW179329, AW178980, AW178914, AW178774, AW177733, AW178908, AW178754, AW179018, AW352158, AW352117, H67854, AW360834, AW352920, D80949, D51079, AW179004, D80228, AW367959, AW179012, AW378543, AW378525, AW378540, AW352163, AW177728, C03092, H67866, AA809122, D59627, C14973, D80168, T11417, AW352174, C14298, AW179009, D58246, AW178781, AW178911, AW352923, AW177722, T13647, AW352917, AW190186, AW178986, D81111, D80064, C14407, AW50856, C14344, D51221, T03116, D58101, D80258, D59317, D80014, D59474, C14227, D59503, AW378533, AA514184, C149557, AW177508, D60010, D60214, D51213, AW351686, AW358580, AW177734, AW177497, D59551, AW352335, AW177723, AW352327, C14046, AW57774, AW352591, D45273, AW352515, AW352542, AA285331, AW378542, AW57751, AW352925, AW52222, Z21582, AW378539, C16955, Z33452, C05763, T03048, AW352516, AW360855, AW352539, D51097, AW352537, AW352928, AW352538, AW352539, C05763, H67838, C04682, Z30160, T02868, N66429, AA305720, D64298, AR00818138, AR008278, AF058696, AA4916, A62300, AB028859, AW132110, A82955, AR060385, AB002449, D26022, X67155, A52909, Y107188, A94995, Y12724, I50126, I50132, I50128, I50133, A67220, D89785, H78862, C34614, AW188443, AR066488, AR016514, AR060138, AA5456, A26615, AR052274, D88547, A43192, A43190, AR038669, Y09669, AR066487, X82626, A30438, I82448, I14842, AR054175, D50010, Y117187, A63261, AR052207, AR008277, AR008281, AR066490, AF008408, A70867, AR062872, I18367, AR016691, AR016690, U46128, A64136, A68321, D13509, AR060133, T9511, X68127, AB012117, AF123263, AR032065, U79457, AD000347, and AR000382.
HNGKG43	4639	958487	1 - 782	
HNGKG61	4640	803187	1 - 408	
HNGKH04	4641	926987	1 - 421	AC002041, AC006352, A12739321, AC002038, AC006359, and AC004057.
HNGKH30	4642	860205	1 - 314	T05706, A61217, AF134707, and A61272.
HNGKH36	4643	784854	1 - 598	AC005939, and AC007488.

HNGK190	4644	787378	1 - 224	15 - 238	
HNGK193	4645	791671	1 - 502	15 - 516	
HNGK191	4646	915231	1 - 682	15 - 696	AC022517.
HNGK138	4647	806053	1 - 619	15 - 633	
HNGK151	4648	883072	1 - 690	15 - 704	
HNGK135	4649	806051	1 - 281	15 - 295	AC005940.
HNGK011	4650	966093	1 - 301	15 - 315	
HNGK129	4651	860305	1 - 285	15 - 299	
HNGK506	4652	974356	1 - 387	15 - 401	
HNGK108	4653	958311	1 - 496	15 - 510	
HNGK169	4654	860302	1 - 675	15 - 689	
HNGK104	4655	926948	1 - 301	15 - 315	
HNGK101	4656	915218	1 - 266	15 - 280	
HNGK154	4657	860206	1 - 146	15 - 160	
HNGK101	4658	915288	1 - 565	15 - 579	AA773098, A1800343, A1743899, R84528, L35485, AF011889, and Z84466.
HNGK146	4659	775300	1 - 341	15 - 355	AL096867, and AB020838.
HNGK134	4660	830026	1 - 299	15 - 313	AB31206.
HNGK125	4661	860260	1 - 725	15 - 739	
HNGK152	4662	835972	1 - 727	15 - 741	AL049691.
HNGK174	4663	860263	1 - 729	15 - 743	
HNGK103	4664	922969	1 - 610	15 - 624	
HNGK108	4665	958312	1 - 1309	15 - 1323	AA149651, A1417864, and AA151561.
HNGK106	4666	839088	1 - 676	15 - 690	AA654505.
HNGK182	4667	785570	1 - 704	15 - 718	
HNGK104	4668	954140	1 - 726	15 - 740	
HNGK104	4669	954943	1 - 608	15 - 622	AL132799.
HNGK120	4670	806045	1 - 535	15 - 549	AA297666, A1859438, A1733856, AA526099, AL046519, AA503298, AA643770, AA721645, AW020992, AA832175, A1244157, A1755214, AA640430, A1754567, AW302659, AW302705, A1079734, AA640410, A1380617, A1754105, A1340817, A1984168, A1176978, A1654247, A1669599, AA468505, AW268757, A1679045, A167792, A1251203, AW190484, AW300650, AA904231, AW151870, AA584620, AA053463, AA857486, AW268954, A1292529, AA652834, A1610737, AW001268, AW004884, AW304805, A1251284, A1345827, A1250552, AA608718, AA135761, A1371208, AA299589, A1565126, AA405726, AW270771, A1251034, AW274350, R62710, A1281561, AA856961, AW338179, AA48610, AA833896, A1537995, AA621381, A1284543, A1061197, AA916171, AA833875, A1135377, T03583, AW303098, AA955031, A1130709, AA492105, A1087133, A1289447, AA133013, AA630854, AA223174, A1356440,

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AL034431, and AL050317.	15 - 572	15 - 508	795280	4672	HNGLK65
	15 - 672	15 - 658	795225	4673	HNGLK90
	15 - 422	15 - 408	923028	4674	HNGLL03
	15 - 411	15 - 397	966105	4675	HNGLL11
T18597, R29657, AA385098, AA385325, R45895, C15406, D59751, C15069, D53161, AA585101.	15 - 649	15 - 635	859922	4676	HNGLL24



HNGLL67	4679	860253	1 - 405	15 - 419	AC004707, AC004531, Z84476, AC005773, AC000338, AC005747, AC006285, AC004662, AF001549, AL0022316, AC005513, AC003110, AL109627, U63721, AC007276, AL109865, AL049553, AC002407, Z83844, AL0023799, AC004653, AF111168, and AL049758.
					AA638934, AA496268, AI923052, AW069227, AW316599, AI634187, AI457313, AA452335, AW247389, W96277, AI0230873, AA947369, R70883, AA614647, AA077637, AA579399, AA501460, AI270647, AI567391, AA652910, AA620510, AA314338, AI798559, AW405593, AA374797, AA583366, H40478, AA363957, AW408767, T92394, AI699049, AW265688, AA226357, AA357850, AA226356, AA558404, AI004740, N86089, AA747609, AA584484, AA613623, AA493947, AI583978, F16409, AI359200, N25079, U95737, AC004216, AC002351, AC002517, AC007878, Z95152, AC002300, Z93930, AC009399, U07562, AL049832, AC003982, Z92542, AL022165, AC005274, AL022578, Z84466, AC004832, AC005799, AC003664, AC005697, AL0031311, AL110502, AL049856, AC004782, AC006965, AL109963, AL004020, AL050307, AC007425, AC004757, AC005962, AL021391, AC004554, L78810, AF207550, AC006449, AL0022326, AL031575, AC007684, Z82203, U91321, AF088219, AL031659, AL133355, AC007773, AC005183, AC007011, AC007238, AL031733, AC005018, AL008730, AL049766, AC005728, AC002299, AC004476, AC003957, AC004033, AL135960, AI131016, AC002381, AC005237, Z82217, AC006011, AL109759, AL131163, AL136504, AC005670, AL031737, AC005332, AL050321, AC007386, AL096818, AL033321, AC004820, AC005486, AL049760, AC002312, Z83822, AL023877, AC007546, Z97987, AL030996, AL008718, AL008719, AL049733, Z95116, AC006017, AC006071, AC005476, AC002553, AC002365, AC007216, AC006576, AL022215, AL049650, AL035405, AC005153, AC003983, Z83826, Z84482, AC004408, AC002091, AL022322, AC007314, AC005702, AL049536, AL022400, AL031277, AC004813, AL022721, AL109839, AF031076, AC006060, AC003844, AL049830, Y15994, AL022345, U95742, Z94044, AL035400, AC003687, AC008249, AC005342, AC005859, AL049779, AC006530, AL078638, Z93242, AL049759, AC001311, AF152365, AL031432, AC005668, AL049709, AC006039, AC003684, AF031078, AC007868, AL035634, AF000354, AF030876, AC005411, AC005250, AC005409, AC009784, AC002390, AC007880, AL049869, U47924, AC005411, AC004966, AC003682, AC006130, AC004601, AC005597, AC007999, AL031178, AL021808, AC005284, AC002073, AF111168, AC007376, AL031295, AL117258, U07000, AL023574, and AP000346.
HNGLL91	4680	789743	1 - 407	15 - 421	
HNGLM06	4681	919222	1 - 126	15 - 140	
HNGLO10	4682	963504	1 - 562	15 - 576	D59859, D51799, C15076, D59502, D80195, C14389, D80164, D80038, D59467, D59275, D80227, D58283, D80022, D80166, D80193, D59619, C14331, D80210, D80391, D80240, D81030, D59787, D51423, D80253, D80043, D80269, D80212, D80196, D80188, D50979,

[illegible]

HNGLT67	4690	958777	1 - 634	15 - 648	AC004818. HG7866, AA504865, AI699049, TI1828, AI004740, AA316036, AA853861, AA721998, AA714073, AA831801, AA626595, T03928, AW089550, AA832016, AA297496, R16258, AA662614, AW019964, N63755, AA256107, R97626, AI955465, AA525407, AA827383, AW057117, AA628740, AD000833, AC004087, Z82244, AI031431, AI139054, AL049570, Z93017, AP00355, AI078581, AI031680, AP000248, AC006545, AL049829, AC006546, Z83597, AC005191, AI021154, AC006006, AC004494, AC004067, AC004624, AC007030, AC020663, Z99716, AC006312, AC005940, AC005914, AC007536, AI031311, AI109627, AP006096, Z69042, MI1392, AC007766, AC005291, AI031279, AC006211, AC012384, AC008009, AI031003, Z97056, AI133448, AI008583, AC003059, AI096702, AC006376, AC004263, AC005316, AF109907, AC004382, AC005546, AC005071, AI023807, Z96074, Z93020, AC006372, AC007021, AI109956, AC005901, AC005696, AC0031728, AC002375, AI034549, AC004242, D88270, AI049569, AC002430, AC004131, Z84487, AI035659, AF196969, Z97198, AC007384, AC005156, AC007376, AC005913, Z84487, AC008015, AC005519, AC004832, AI022336, AC005792, AI033527, AC002543, Z68331, AC012085, U95742, AI022312, AP000023, AC006057, U66061, AC002350, AC006430, AF001548, U73330, AP000008, AC003317, U82668, AC008055, AC006544, Z98051, AP000466, AC007686, AC003108, AP000704, AC006450, AC000025, AC005839, AC011331, AC004585, AI022313, Z83826, AC004671, AF001550, AC004125, AI035072, Z98941, AC004920, AI022162, AC005154, AC005247, AC005220, AC004158, AI035420, AC006965, AC005509, AI033377, AP000505, AC006942, AC007429, AC006146, AI133163, AC005622, AC004253, AI031657, AC004099, AC005670, Z82217, AI137447, I4294, AC005632, AC0060530, AC005730, AC005005, Z82215, AC005874, AF134471, Z83840, AC005081, and AC005971.
HNGLX63	4691	934371	1 - 591	15 - 605	
HNGMA01	4692	915306	1 - 410	15 - 424	
HNGMA49	4693	860244	1 - 324	15 - 338	NS5508, AA666332, AI828733, W03286, AW327868, D80043, AW277171, AI038799, D80188, AW401408, D80251, AI120959, AI561097, D80366, D80253, AI470431, AW089101, AA846952, AA449594, AA092078, AA668807, AW168420, AA502858, AI912638, AA536016, AI751216, AI470437, AA303007, AI59251, AW380254, AW055226, AI119691, AA083379, AI26372, AW118913, AA487567, AW103509, N40815, AW103758, D80247, TI1417, AA118870, D58283, AW117951, AI124610, AI817976, AA220943, AI674174, D50979, N73855, AA809122, AA502860, D59474, AA446544, AI72222, C16955, D80014, AA572773, AA203135, AI181823, P95119, AI022599, AI312559, AI038072, AA1482345, AW148792, AA828781, AA828758, AA826134, AA828771, AA828802, F01109, AI039375, AA297098, AA853836, F32808, W05405, AA503238, AA315753, AA302973, AA984258, AI044904, AI254913, AA598551, AI357924, AW275425, H67854, AW706480, AA657459, AA828227, AI135743, T08298, AA955609, AI969436, AA587517, AI809745, AA655010, AI038705, AW271235, AI167284, AI025864,



AI560085, AI084348, D57483, AA584667, AI818737, FI3647, AI122618, D51999, CI4389, AW043636, AI589461, AI589230, AA610373, AA525926, AI027555, AA769402, AI792957, AI800168, AI436601, D80269, H67866, AA048721, AA745475, D80439, D58246, D81030, D59889, AC004695, AC006582, AC004998, AF200465, AC005519, AC002365, Z82901, AI096803, AI049697, AP000967, AC004126, AC006629, AI109827, U72787, AC006121, AC002350, AC004782, AI031286, AC004686, AI078463, Z95152, AC004662, AC005373, AI031775, AC004035, AC004864, AC005993, AC004525, AC005386, AC0022307, AC007283, AC006120, AP000555, AC005104, AC007324, AC007100, AC008101, AI022397, AI135959, AC006006, AC009247, Z84469, AI034417, I56088, AC004019, Z97196, AI035695, AC004815, AC005288, AP000496, AC005230, AC005291, AF196972, AF207550, AI031009, Z69713, AF107043, AI021878, AC007993, AF053356, U78027, AF029750, AC003101, AI080243, AC006203, Z84476, AC007021, AI035246, AI035422, AC004865, AI035045, AF000048, AC003042, AI031447, AF030453, AP001067, AC004834, AI035555, AI117352, AI096791, AI049646, AC004526, AC003963, AI031777, AI033563, AC003029, Z98050, AC005479, AC007162, AC005180, AC007541, AC006571, AC006387, D83253, AP000298, AC005567, AI031680, AC004910, AC004220, AF064865, AI031667, AI031589, AF222684, AI121603, AD000833, AF141308, M90058, L35930, Z69917, AD000812, AC004755, AC005624, AC006275, AC002389, Z82190, AC006347, AI049549, AC002126, AC006468, AP000504, AP000113, AI034412, AC005166, AI008730, AI121820, AC004806, AI121756, Z97180, AC004056, AI022722, AI031668, AC004701, Z82198, AI079342, AC004594, AI034548, AC002517, AC004957, AP000350, AP000356, AC004816, AC005747, AI135747, AC006287, AF129756, AC009399, AI049835, AC006057, AC008125, AC005632, AC008072, AC004491, AC007370, AI121578, AC005512, AI109627, AC004895, AC005940, AC005829, AC007425, AC007435, AC005212, AI050325, AC004472, AC005138, AC005702, AF039907, and AC007226.					
HNGMB26	4694	860166	1 - 305	15 - 319	
HNGMB33	4695	773752	1 - 529	15 - 543	RI7449, and N87385.
HNGMC51	4696	860243	1 - 669	15 - 683	
HNGMD03	4697	923041	1 - 487	15 - 501	
HNGMD04	4698	927026	1 - 467	15 - 481	
HNGME93	4699	793483	1 - 528	15 - 542	
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HNGMF04	4700	860242	1 - 705	15 - 719	AA678970, AI054341, AI792623, AI054090, AI246061, F33126, AA274896, AI135605, AI135968, AI251944, AI135811, AW303098, AA714073, AA657910, AI037430, AA706202, AA515712, AI561210, AI434365, H72943, AI862790, W63553, AI133906, AI133902, AI302250, AA502813, AI636734, AI473549, AA378207, AW026867, AA488419, AA532109, AA595504, AA4297145, H08866, H24957, AI4468975, AI049504, AW392414, AA024443.

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HNGMF11	4701	966114	1 - 147	15 - 161	D30932, R14811, F06803, Z44371, H29207, AC006359, AC002504, and AP001172.
HNGMF46	4702	795236	1 - 443	15 - 457	
HNGMF79	4703	772974	1 - 719	15 - 733	
HNGMF94	4704	966091	1 - 583	15 - 597	
HNGMG06	4705	934318	1 - 380	15 - 394	
HNGMG08	4706	938361	1 - 378	15 - 392	
HNGMH80	4707	775503	1 - 532	15 - 546	
HNGMH93	4708	791725	1 - 415	15 - 429	
HNGMH04	4709	923011	1 - 270	15 - 284	
HNGMH89	4710	786340	1 - 566	15 - 580	
HNGML07	4711	952224	1 - 654	15 - 668	
HNGML53	4712	860240	1 - 654	15 - 668	
HNGMM51	4713	860201	1 - 488	15 - 502	
HNGMM54	4714	933558	1 - 208	15 - 222	AA136477, AL049742, AC006511, AL031295, AL033377, AL031985, AL109963, Z95116, AC006530, AC004963, AL080243, AC004149, AC004106, and AC002565.
					AC004147.
					AC002484.
					AC007787.
					AW239562, and Z83841.

HNGMM187	4715	806036	1 - 468	15 - 482	
HNGMV73	4716	806000	1 - 510	15 - 524	
					AW021116, AF111168, AC007221, Z98742, AC007649, AC005288, L78833, AL021939, AL121825, AC004884, AC004033, U29895, AC005562, AC005500, U80017, AC006966, AC002455, AC004820, and AC007151.
HNGMW52	4717	860231	1 - 583	15 - 597	
HNGMW92	4718	790832	1 - 616	15 - 630	
HNGMX80	4719	786255	1 - 312	15 - 326	
HNGMX87	4720	833612	1 - 521	15 - 535	
					W05155, AA195301, AA424985, AA234376, AA372119, AA724177, H72335, AA316629, and AC004126.
HNGMX91	4721	789680	1 - 330	15 - 344	
HNGNA23	4722	779201	1 - 122	15 - 136	Z69714, and Z72521.
HNGNB01	4723	915258	1 - 70	15 - 84	AA582993.
HNGNE65	4724	963425	1 - 566	15 - 580	
HNGNE40	4725	861967	1 - 676	15 - 690	Z54072.
HNGNG37	4726	847818	1 - 561	15 - 575	AL022241.
					AA579385.
HNGNH03	4727	922831	1 - 566	15 - 580	
					T07903, AL521042, AA135761, AA172103, AA484892, AA688421, AA455699, AL036536, F02264, AA768179, F04183, AA676592, AA846014, AL370470, AA610644, AA613761, H88641, AL205181, AA741403, AL298079, AA558366, AA664126, AA329422, R99076, N78600, AA532724, AA740571, AA297006, AA491767, AW151761, AL702049, AL758424, AA297195, AL002952, M77908, U91326, AC002544, Z83840, Z82208, AL079295, AC005488, AL035086, AL035457, AL020997, AC007240, AL049830, AC007371, AC007227, AC007421, AC004583, AC005520, AC003043, AC005519, AC020663, AC006014, AC006468, AC007308, AC005722, AL049776, AC006387, AC007993, AC004983, AL031848, AC002470, AP000008, AC006241, AL031291, AC005940, AC009516, AC004975, Z83826, AC003688, AL049872, AC004134, AF111168, AC004131, AC006948, AC005377, AL050318, AC006064, AC005665, AC004832, AC002553, AC005274, AC016025, AL096701, AL080243, AC007934, AC005859, AC007537, U91323, AC005014, AL132712, AL022323, AC002726, AP005553, AC002996, AP005569, AC003029, AC003971, U95743, AC002367, AC006088, AC005049, AC000134, AC004883, AL031767, AC005409, AL050348, Z99716, AC005031, AB023050, AC004222, U62293, AL121655, AC002330, AC004185, AL031659, AC018633, AL022721, AC006160, AC005529, AC006077, AL008635, U80017, AC005914, AC007666, U85195, AC006211, AC005215, AC002059, AC006285, AC005057, AC004408, AC005822, AB014077, Z85986, AL132777, AC004854, AL121652, AC007566, Z98048, AC004526, AF196969, AC004895, AC005996, AC008044, AC003101, Z98742, AC006540, AC007774, AF000658, AC006138, AL1008718, AL109758, AL078476, AC005620, AL121923, AC004531, AL049760, AC007546, AL022320, AL049694, AC005512, AF111169, AL031680, AL049540, AC005041, AL080160, AL020993, AL132718, AL044229, AP000114, AL096791, AC008372, AC003109, AC005479, AC004209,

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HNGNI04	4728	926985	1 - 480	AC000404.
HNGNI52	4729	781913	1 - 566	
HNGNI75	4730	860168	1 - 512	
HNGNI94	4731	893899	1 - 357	
HNGNM24	4732	841902	1 - 300	
			15 - 494	AC005356.
			15 - 580	AA302963, AA559290, AA491814, AT754955, AT264743, AI358343, AA747276, AA682912, AW088202, AT284640, AA747480, AA804379, AI610159, F56273, R91994, AI580652, AA074130, AI801600, AW193432, AA708678, F23279, AI079812, AI053672, AI653886, AW303876, AI569086, F28576, AT749284, AI499938, AW247819, AI902694, AI049722, AI679045, AA515051, AI431303, AI046409, F32894, AI312149, F18974, AI281881, AA649642, AW238016, AW080134, T08914, F25276, W236342, AI119691, AI471481, AI292531, AA306732, AI041412, AI254615, AI287964, AI688846, AA664535, AA503258, T33607, AI947547, W273218, AI301700, AW19262, AA934680, AA714453, T40338, AA664407, AW029038, AI047643, AW301350, AW303196, AW193265, AI299050, AW274349, AI334443, AI358571, AI375710, AI357551, AI709365, AA747472, AT286356, AT252554, AA529785, AI350211, AA745582, AA977743, H64777, AA350839, AA663306, AW440976, W07122, AI291124, AW024008, AA744220, AA469451, AI041706, AI801591, AI761471, AA492132, AI339850, AI473943, AI567674, AI962050, AA525763, AA603445, H64560, AI464646, AW166815, AI446601, AI110770, AA533725, AW276827, AI079910, AA515435, AI291268, AI270248, AI287528, AA654968, AW162049, AW250970, AW062774, AI133164, AI537030, AW131034, AW104748, AW088058, AW023389, AI648558, AA441788, AI030008, AI452599, AI043721, AT289067, AA614069, AI184226, AA810318, T56067, AI937850, AI251002, AI567391, AA100599, AA501614, AI298710, AA557879, AI625244, AA357686, AA826303, AA578918, AI919029, AW440633, AI133636, AW406659, AI887483, AA133986, AA713815, F28776, AA469624, T07451, AI610920, F19012, AW339568, AT246796, AA483068, AI135643, AI624698, AW276435, AI061296, W261817, AI687962, AW173651, AA878140, AA525190, AI287651, AI017024, AA975645, AI904894, AI799719, AA491767, AI568678, AI434695, AA584489, AA702023, AI143242, AH71543, AI205126, AI674873, AA085022, AA654693, AI281697, AA098892, AA152463, AA633936, AI423941, AI282832, AA225155, N25296, AI539563, AW440836, AA828704, AB890923, AW265385, AI469003, AI537955, AI917271,

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HNGNO03	4733	860155	1 - 518	15 - 532
HNGNR04	4734	926870	1 - 599	15 - 613
HNGNS10	4735	963470	1 - 719	15 - 733
HNGNS58	4736	788971	1 - 306	15 - 320

HNGNS90	4737	787388	1 - 453	15 - 467	
HNGNV80	4738	908167	1 - 440	15 - 454	
HNGNV04	4739	860199	1 - 439	15 - 453	
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HNGNW85	4740	783747	1 - 447	15 - 461	Z83846.
HNGNX37	4741	806018	1 - 683	15 - 697	AC004549.
HNGNX65	4742	806042	1 - 706	15 - 720	AC007376.
HNGNZ01	4743	860158	1 - 507	15 - 521	AA853836, AL046225, AL045756, AL049569, AB023050, AP000511, AL031681, AC006946, AC004216, AC009301, AC002117, AL022165, AC006011, AC006057, AC005237, AC005179, AC004887, AC005102, AC005520, Z83846, AC004491, AP000350, U95090, AC004967, AC004617, AC005488, AC005037, AC006167, AC007193, AL033524, AC005082, AC003684, AC007021, AP000512, AC004832, AF064858, AF030453, AC005088, AP000065, AL049869, AL049843, and AC004408.
HNGNZ38	4744	790926	1 - 562	15 - 576	AC000025, AC005527, AC002991, AC005529, X89398, and AC007637.
HNGNZ91	4745	839887	1 - 508	15 - 522	AA923791.
HNGOA11	4746	966082	1 - 512	15 - 526	
HNGOA82	4747	779154	1 - 435	15 - 449	
HNGOB95	4748	791700	1 - 502	15 - 516	
HNGOD68	4749	790805	1 - 288	15 - 302	
HNGOE64	4750	860143	1 - 551	15 - 565	
HNGOF50	4751	796548	1 - 501	15 - 515	
HNGOF84	4752	782188	1 - 320	15 - 334	
HNGOF85	4753	783717	1 - 792	15 - 806	
HNGOG49	4754	971178	1 - 667	15 - 681	
HNGOI42	4755	958943	1 - 506	15 - 520	U73641.
HNGOI86	4756	806013	1 - 639	15 - 653	
HNGOI13	4757	921433	1 - 325	15 - 339	
HNGOI64	4758	860193	1 - 473	15 - 487	
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HNGOK59	4759	789689	1 - 244	AC006274.
HNGOK86	4760	784813	1 - 703	
HNGOL14	4761	860185	1 - 342	AW169469, A1648538, AA563844, AA491697, F32710, AA917906, N71340, N71390, AA584151, AA993165, H91338, A1633783, AA487995, AW193500, W24602, AW173443, A1925559, AA598617, AA487884, A1040948, W38468, AA479003, AA742775, R59668, T50568, AA721561, AA148656, T50436, AA361244, AA402102, A5922633, A687542, AA229443, A1635819, AA424280, A1150131, A1914151, H80203, AA0077646, T52997, A1048002, A1863176, A649660, T86131, A1047480, T16065, A1557342, A1564215, AA348422, A1697727, W44607, N35012, R17793, A1138242, A1274406, AA470958, A1921692, A174381, A1567831, A1445768, AA363150, AA386533, D25667, AA374525, A1889648, A1613487, A1336206, AA427747, AA679512, A1689135, AA010672, T61362, AA837739, AA493852, AA568314, AA491545, W79083, AA507990, A1912505, A1188963, AA078384, R30966, A1628482, AA984829, AW029626, A1888050, H73306, M77894, A1538433, R68503, A632493, AAG32484, AA384064, AA837796, A1885488, AA713534, AW236277, AA650348, A845333, A524504, H47461, A1754286, W45073, A1215784, H05449, A4576099, A1572680, R81455, A632994, AP005558, A1035420, AC005183, AC009516, AC006582, A1079342, AC006031, A1079534, AC006487, Z93096, AC003025, A1139813, AP000356, AC006536, AC004228, AC005138, AC000387, AC004622, A1096791, A1035462, A1049569, AC000666, Z99128, AP000835, AC000120, A1010770, AC000379, A1031276, AC002312, AC006042, Z68870, A1031389, A1009181, A1032384, Z97183, A1049694, A1035086, AP000317, AP000051, AP000119, AP000166, A1006952, AC007263, A1880286, AC005837, A1132985, Z86090, A1096774, AC004134, AC005913, AC003071, AC005972, AC005578, AC000085, AC003693, A12121754, A1006345, AC004701, A1109963, AC005562, AC002044, A1049856, A1035417, A1031670, AC005043,



HNGO022	4762	953888	1 - 143	15 - 157	AC007358, AL031533, AC004596, AC003077, AL031587, AC004883, AC002430, AL031311, AC004895, AC007384, AC005011, AC005324, AF222686, AC005911, AL034402, AL031295, AC007666, AC008079, AC002543, AL031275, AC002040, Z98044, AC004659, AL0303504, Z97055, AC005544, AL078381, AL020990, AL031775, AC003042, AC007324, AL031729, AL022313, AC008101, AC005186, AC006151, AC005823, AC007784, Z96622, AC005239, AC006049, AC004777, AC004143, AC005200, AC006365, AP000513, AC003036, AC0023049, AF030453, AL004376, AF064861, AC005007, AC005225, AL049553, AC006445, AC007056, AL0050321, AC004451, AL008729, AL133485, AC005479, U95626, AC002994, AC008249, AC006459, AL004980, AC002470, AL034347, AC006059, AC004527, AP000227, AC005331, Z82173, AC005597, AL023575, AL024418, AC004587, AP000142, AP000087, AP000692, AF196970, AC002996, AP000090, AL031577, AC004675, AL122020, AC002553, AC004832, AC006226, Z98884, AC005237, AC007435, AP0088219, AC005234, AL022476, AF126403, Z82184, AC004779, AC004107, AC005515, AC005253, AC000067, AC004398, AL035450, AP000300, AC004541, AL022315, AP000086, AP000045, AP000113, AL009051, AD000092, AL031864, AC004796, AC004815, AC004638, AC002331, AL035685, AC003108, AC007151, AC006600, AC008064, AC005291, AC005342, AL008731, M63796, AC003963, AL008725, AC005031, AL079339, AC002565, Z82202, AL096763, AC006012, AC004999, U80017, Z82194, AC005747, AL117694, AP000555, AC011604, Y08456, U62556, AC004159, AC004410, AC004475, and Z94161.
	4763	926972	1 - 411	15 - 425	
i-NGOP10 HNGOS22	4764	963483	1 - 438	15 - 452	AA631933, AL859906, AL049694, AC004974, AC007358, AL031680, AF178030, AC004851, AP000696, AP000697, AC007746, AC010197, and AC005876. AA424261, AA668202, AA639008, and AA721512. AW148507, AA837087, AA126519, AW410354, AA664942, AA402129, AL537772, AA633762, AL341571, H25921, AA890425, AL096442, AW088381, R97336, AF034194, AF037630, AW027660, AW177790, AA380354, H95302, AA455483, AL623764, AA750422, AL070345, AW081303, AA324242, AL137013, AA551181, AA601356, AL021940, AL022396, AC005070, Z92542, AC005512, AP000181, AC005180, AP000117, L35667, AC004148, AC0050483, AC007671, U85195, AC005181, AB000638, AC005520, Z97876, AC012384, AL117338, AC005513, AF135187, AC003104, AF129736, AL034549, Z98884, AC004453, AC005049, AC006045, AC008273, AC005736, AC005612, U73638, AC007193, AL022399, AL031848, Y14768, AC005751, AF172277, U51244, AC005042, AC005833, Z93017, U07562, AC007055, AC004685, AC004797, AL022238, U50537, AL023096, AC004874, AC003069, Z15025, AB020865, AC004976, AC005037, AC006441, AC005305, AL049546, AC006578, AL031284, AL022312, AC002468, AL031289, AC005078, AC005668, U45984, AC006199, AL031432, AP000331, AP000501, AF030453, AC004656, AC004694, AL022315, M58509, AC004799,
	4765	860176	1 - 443	15 - 457	

					AL013111, AC004634, Z29373, Z82243, AL034403, AL109963, AL021391, AC004812, AC005725, AC004542, AP000172, AL109977, Z83844, AC007736, AP000057, AP019413, AL133448, AP000125, AP000505, AL049570, AL008723, AC007151, AC007773, AL008732, AL096755, AP036405, AC005618, AL022328, Z82246, AL035458, AC003991, Y18000, AL008638, AC007687, AC006566, U80017, AC004686, AL009181, AC005258, AP000100, AL034548, Z83843, AC004881, U91326, AC007384, AC005088, AC007088, AL121580, AC007546, Z83843, AC005846, AC007533, AC006576, AL035045, AL020997, AL133245, AL035089, AC005028, AP001549, AC004019, AC007785, AC005535, AL031120, AC007731, AC002550, AC004655, AC004590, AC007214, AC005746, AC008115, Z82201, AC004414, Z97065, AL021397, U82668, AL049539, AC004876, AC006571, AC005158, AC005150, AL049712, AF205588, Z98200, AC003108, AL096701, AC004386, Z73417, AC004475, AC005777, AL132799, AC003002, AC005365, AP000221, AP000085, AF165142, AL031674, AC005070, AL031577, AL080317, AL137191, AL049871, AC002492, AC005071, AL022319, AL035691, AC006064, AC005696, AC005907, AC005778, AL035542, AL031230, AL031281, AC019014, AC006213, AC007371, AC006946, and U47924.
					AC005844.
				15 - 412	
HNGOV03	4766	922963	1 - 398	15 - 298	
HNGOV65	4767	921416	1 - 284	15 - 422	
HNGOW13	4768	926929	1 - 408	15 - 694	
HNGOV01	4769	915210	1 - 680	15 - 386	
HNGOV10	4770	915012	1 - 372	15 - 248	
HNGOV10	4771	880777	1 - 234	15 - 435	
HNGPH12	4772	969683	1 - 421	15 - 695	
HNGPI08	4773	947384	1 - 681	15 - 711	
HNGPI23	4774	855983	1 - 697	15 - 608	
HNGPI51	4775	805997	1 - 594	15 - 510	
HNGPI91	4776	959740	1 - 496	15 - 545	
HNGPN01	4777	913782	1 - 531	15 - 590	
HNGPN46	4778	954997	1 - 576	15 - 514	
HNGPP61	4779	860145	1 - 500	15 - 189	
HNGPR03	4780	949269	1 - 175	15 - 604	
HNGPS10	4781	963469	1 - 590		
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				AA974734, AW072398, Z39952, F03162, and AL137476.
				AA834563, AA707629, and AA465337.

HNHAI15	4791	860128	1 - 115	15 - 129	
HNHAI68	4792	527572	1 - 151	15 - 165	
HNHAI59	4793	703576	1 - 404	15 - 418	
HNHAK83	4794	574391	1 - 307	15 - 321	
HNHAI79	4795	574384	1 - 125	15 - 139	
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AA804955, AA085410, R98002, H49753, AA523605, R97239, T94072, AA128941, F239048, AA578621, AD246080, AA364082, AL679871, AA778962, AL886736, AA503054, T38440, H95865, AD246096, AL679294, AD021189, AA452325, AW328446, AL277573, AA847499, AL278440, AA378474, AL332615, AA742818, AL742168, AA349606, AA496724, AL309943, T07903, AD021429, AA013588, AA021428, AA054055, M78032, AA086042, AA458733, AA661583, T05684, AA342626, W01323, AA458573, AA721572, AA019872, N26230, AA367821, AL135811, AL741401, AW023111, AL653783, AL159026, AA765925, AA59423, AL034555, AC007055, T34294, AL007860, AC007227, AC005300, AC005082, AF205588, AC004859, AC007536, AC005778, AC005914, AC000134, AC000134, AL022313, AP000010, AL109827, AB015355, AL080243, AC004253, AC007193, AL031291, Z15025, AC005913, AC005588, AL031283, AL035086, AC008372, AD246003, Z98884, AC004896, AL117337, L05367, AC005736, AL109984, AC006166, AL022323, AC002350, AC006479, AP000032, AC004876, AC006538, AC006312, AC007056, AL117338, AC006449, AC005089, AL049780, AC004129, AL022338, AC005037, AL121658, AC002477, AC006251, AL136501, AL121653, AC007842, AL117344, AC004134, AC005081, AC004686, AC007263, AC004408, AC006966, AC007308, AC005200, AC004841, AL008729, U47924, AP000313, AC006084, AL024498, AC002470, AF045555, AP000194, AC004820, AP001052, AL132712, AC005971, AC006213, AC004983, AP000493, AL022318, AC005254, Z95115, Z75407, AC004520, AB023051, AC004973, AC004905, AC006001, AC003684, AL133163, AL049575, AC005015, U52111, AP000226, AP000350, AP000356, AC004890, AP000050, AC005261, AC000024, AL049694, AL096702, AC005317, AC006115, D87011, AC016830, AC006000, AC005484, AC005562, AF038438, AC004967, AP000144, AL049874, AP000087, AC005332, AL031133, AC002565, AC005527, AL031622, Z84476, AC004231, AC007785, AP000117, AP000355, AC004814, AC008101, Y14768, Z98200, AL133243, AC005316, AL022324, AP000355, AC006065, AC005622, AC005821, AC005529, AC002531, AF196970, AC006515, AC006237, AL031432, AC004815, AC004753, AL109967, AC004491, AL034420, AL109758, AC006271, AC009542, AC007544, AL049712, AC005369, AC007540, AC007225, Z99716, AC002425, AF001549, AC003007, AC005099, AL021707, AF129756, D87009, Z97054, Z99943, AL049198, AF111167, AL035398, AC007792, AL121595, AL133382, AC005531, AL031230, AL021808, AC005542, AC007546, Z84486, AC005088, AL132987, AL049776, AC004228, AF030453, AC005542, AP000513, AP000695, Z94056, X55448, X54486, AL034548, AC004927, AP001065, Z95531, AC006012, AC005786, AC003100, AC004832, AF146191, AL034375, AC005789, AF069489, AP000553, AP000312, AL050318, Z68276, AL139054, AF207550, AC007314, AF104455, AC010200, AC002074, Z98590, AL109854, AC006581, AC002310, M55987, AL031635, AF109907, AC004955, AC004805, Z97055, AC004526, AC008079, AL049643, AC005901, AP000104, AJ229043, AL021453, AC003035, AL031427, AC005004, AC002094, Z75744, AC009516, AC006211, AC005072, AC002126, AC004663, AC005189, AC005399, AP000167, AP000052,				
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HNHBV45	4823	774280	1 - 377	15 - 391	AC06262, AF165926, AC004821, and AL022336.
HNHBV60	4824	964712	1 - 218	15 - 232	AL031654.
HNHBV83	4825	694401	1 - 478	15 - 492	AC004258.
HNHBV03	4826	924873	1 - 387	15 - 401	
HNHCC42	4827	577343	1 - 345	15 - 359	
HNHCC63	4828	574309	1 - 384	15 - 398	AC007758.
HNHCE68	4829	574028	1 - 425	15 - 439	
HNHCE75	4830	679154	1 - 407	15 - 421	
HNHCE35	4831	860112	1 - 409	15 - 423	
HNHCE39	4832	574084	1 - 117	15 - 131	AC005390.
HNHCE68	4833	753558	1 - 237	15 - 251	
HNHCE71	4834	760565	1 - 225	15 - 239	
HNHCE80	4835	786033	1 - 485	15 - 499	
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HNHCL20	4836	780527	1 - 420	15 - 434	AA362218.
HNHCL38	4837	574082	1 - 211	15 - 225	
HNHCL47	4838	719476	1 - 264	15 - 278	
HNHCL80	4839	573010	1 - 279	15 - 293	
HNHCL90	4840	577186	1 - 187	15 - 201	AC009405.
HNHCO27	4841	574337	1 - 205	15 - 219	
HNHCO48	4842	860641	1 - 425	15 - 439	
HNHCO64	4843	574147	1 - 392	15 - 406	AC007559.
HNHCP18	4844	666844	1 - 196	15 - 210	AP000350.
HNHCP22	4845	934307	1 - 573	15 - 587	
HNHCP37	4846	866950	1 - 361	15 - 375	
HNHCP78	4847	506696	1 - 312	15 - 326	AW419246, and AW277087.
HNHCP88	4848	574341	1 - 228	15 - 242	
HNHCO70	4849	757410	1 - 431	15 - 445	R69234, H70121, and AC005071.
HNHCU18	4850	574394	1 - 118	15 - 132	



HNHCL42	4851	850918	1 - 664	15 - 678	AI539360, AC003007, and AC005632.
HNHCL57	4852	735005	1 - 226	15 - 240	
HNHCV72	4853	766213	1 - 387	15 - 401	R38821, and AF070579.
HNHCZ07	4854	953881	1 - 321	15 - 335	
HNHCZ23	4855	574325	1 - 318	15 - 332	AI366208, AC002041, AC002038, AC006352, and AI239321.
HNHDA07	4856	855988	1 - 443	15 - 457	
HNHDA79	4857	574350	1 - 140	15 - 154	
HNHDA88	4858	574150	1 - 147	15 - 161	
HNHDB11	4859	574323	1 - 488	15 - 502	
HNHDB23	4860	676290	1 - 488	15 - 502	
HNHDB46	4861	574329	1 - 488	15 - 502	
HNHDB93	4862	800661	1 - 60	15 - 74	
HNHDC26	4863	574304	1 - 341	15 - 335	
HNHDC47	4864	708705	1 - 329	15 - 343	
HNHDC83	4865	577339	1 - 421	15 - 435	
HNHDC93	4866	734794	1 - 196	15 - 210	
HNHDE38	4867	709277	1 - 334	15 - 348	R67093, AW316599, AL121287, AI313157, AA807556, AA188940, R91931, AA491440, AI453160, AI564294, AA683069, AA632765, AW081324, AI471467, AL041895, AA614595, AA564682, AA469441, AA314338, AW07424, AA366847, AW028834, AI891075, AW058223, AJ011930, AJ003147, AL022724, AL096761, AC002477, AL031592, AL049539, AC002357, AL024498, AC005599, AC005082, Z96776, AC003108, AL096766, Z84469, AL020997, AP000555, AL031311, AC002418, AC007993, Z83843, AC004386, AC005778, AL109952, AC004770, AC005015, AC002472, AC005625, AC012039, AC006293, AB003151, AP000688, AC005245, AC005777, AL034582, AP000502, AC002394, AF019413, AL049537, AL133448, AF134726, Z69721, AC000069, AC002314, AC000095, AC007326, AC005726, AL133445, AC006449, AC004031, AC006071, AC005998, AC005484, AC005005, AC005288, AC005514, Z82243, AI239325, AC004834, AL008583, AC003982, AL121603, AC004882, AC005081, AC005529, AC004131, AB017602, AC004883, and AC000025.
HNHDF31	4868	968249	1 - 223	15 - 237	AC006560.
HNHDF48	4869	574385	1 - 200	15 - 214	
HNHDF06	4870	936046	1 - 327	15 - 341	
HNHDF60	4871	860101	1 - 314	15 - 328	
HNHDI62	4872	577701	1 - 213	15 - 227	
HNHDI90	4873	789082	1 - 466	15 - 480	
HNHDI94	4874	773592	1 - 312	15 - 326	
HNHDM03	4875	924713	1 - 389	15 - 403	

HNHDM40	4876	711352	1 - 341	15 - 355	AC007052	
HNHDM50	4877	724550	1 - 539	15 - 553		H41308, H94134, H37815, H51061, H69577, U47924, AL049872, AP000121, AF111169, AC005332, U63721, AL031681, AC005839, AP000321, AL022165, AC005280, AC005412, AC002310, AC005488, AC005736, AC004895, AC005015, AC005180, AF001549, AC006120, AC006965, AC004983, M15938, AC007151, AC004797, AC005081, Z99716, AC0002470, AL133245, AP000167, AP000052, Z93241, AL023553, AC004998, AC004686, AC007312, AC006088, Z93017, AL049776, AC004815, AC004923, AP000113, AC006211, AC003109, AC003108, AC004596, AL139054, and AC002519.
HNHDM74	4878	506621	1 - 423	15 - 437		
HNHDM27	4879	573388	1 - 188	15 - 202		
HNHDM79	4880	735007	1 - 304	15 - 318		
HNHDM04	4881	859888	1 - 738	15 - 752		
HNHDM29	4882	746093	1 - 340	15 - 354		AL143917, E04378, D10017, AF023669, AB032964, E04379, and E04380.
HNHDM11	4883	967334	1 - 482	15 - 496		
HNHDMQ17	4884	573328	1 - 347	15 - 361		
HNHDMQ35	4885	707334	1 - 325	15 - 339		
HNHDMQ39	4886	704560	1 - 147	15 - 161		
HNHDMQ36	4887	577256	1 - 494	15 - 508		
HNHDMQ65	4888	573357	1 - 337	15 - 351		
HNHDMQ71	4889	496246	1 - 570	15 - 584		
HNHDMQ93	4890	923817	1 - 416	15 - 430		
HNHDMR10	4891	968082	1 - 367	15 - 381		
						AL053568, AA570255, AV069227, AW161879, T05834, AC007276, AP000355, AP000356, AL049795, U91326, AC005071, AL024507, AL035447, AC005081, U91323, AC007637, AL022476, AC004167, AC004491, AL031311, AC002563, AC005480, Z75407, AL008582, AC002425, AC004821, U91318, AC004099, AC005089, AF111168, AL024498, AC002073, AC005500, AC007192, AC002094, AP000512, U78027, AC005412, AC000379, AC005067, AC005212, AC007216, AL022165, AL021918, AL031432, AL035249, AC005736, AC007387, AC005520, AC007842, AC007421, AC007225, AL133163, AL132712, AL031587, AC002472, AC005971, AC005193, AB003151, AC004765, AC005015, AF030453, AC008018, AC005821, AL031255, AC005696, AL049589, AC005180, U25956, AC005088, AL133312, AL031680, AC006480, AC004125, AC007664, U95740, AF165926, AC008101, AC005011, U52111, AC005523, AC006449, AC004067, AC005091, AC005189, AC006023, AC005730, AC006581, AC007566, AC006487, AC004143, AL049843, AP000557, AC005094, AC005280, AC005261, AC005274, AC004033, AL050338, AF001550, AC000134, AC005839, AL121603, AF069074, AC002126, AL133243, AP000116, Z98044, AC005488, AL031683, AL031685, AF053356, AL133246, AL022316, AC005338, AC005722, AL031795, AC006211, AL022318, AC0066251, AC004019,

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HNHDR28	4892	685580	1 - 410	15 - 424	AW086034.
HNHDR71	4893	573480	1 - 451	15 - 465	
HNHDR57	4894	683585	1 - 246	15 - 260	
HNHDR53	4895	573347	1 - 200	15 - 214	
HNHDR58	4896	573349	1 - 334	15 - 348	
HNHD701	4897	917004	1 - 369	15 - 383	
HNHD728	4898	887158	1 - 447	15 - 461	AA311373, AA318324, AL623755, AW763181, AL979227, AA423972, AW193871, AL048971, AP000528, AP000529, and AC004527.
HNHD742	4899	574455	1 - 245	15 - 259	
HNHD754	4900	728871	1 - 482	15 - 496	
HNHDU83	4901	717796	1 - 428	15 - 442	
HNHDV50	4902	506622	1 - 275	15 - 289	
HNHDV84	4903	750262	1 - 372	15 - 386	
HNHDW78	4904	723189	1 - 271	15 - 285	
HNHDW80	4905	779334	1 - 329	15 - 343	
HNHDX84	4906	615272	1 - 230	15 - 244	
HNHDY18	4907	573329	1 - 367	15 - 381	
HNHDY37	4908	582473	1 - 187	15 - 201	AL809475.
HNHDY45	4909	576776	1 - 320	15 - 334	AA320060, AA581317, AA488419, W96277, AA554958, AA020873, AL923052, AL207534, Z84484, AC004912, AC005015, AC004813, AL009181, AC005914, AL024507, AL022312, AL023876, AL096775, AC002126, AC004408, AC005207, AL132987, AC006450, AC006576, AC004070, AL034423, AP000036, AL050306, AC002412, AP000099, AC006121, AL132796, AC008012, AC008372, AP007563, AC004034, AP000353, AC004890, AC004031, AC004656, AP000466, AP000322, AP000168, AP000053, AP000133, AP000211, Z97989, AC004910, AC007938, AL117355, AL035460, AC006277, AC002077, AC004763, AC005899, AC004585, AP000121, AC003029, AC006581, AC002511, AP000563, and AC002546.
HNHDY50	4910	924211	1 - 163	15 - 177	
HNHDY54	4911	945708	1 - 581	15 - 595	
HNHDY83	4912	795954	1 - 243	15 - 257	AL031274, Z98941, AC010582, and AL121576.

HNHDZ14	4913	506738	1 - 312	15 - 326	AL033525
HNHDZ26	4914	419716	1 - 418	15 - 432	AW024707
HNHDZ69	4915	573346	1 - 236	15 - 250	
HNHEA06	4916	835893	1 - 340	15 - 354	
HNHEA21	4917	574868	1 - 229	15 - 243	E04378, and D10017
HNHEA40	4918	573327	1 - 273	15 - 287	
HNHEA96	4919	796491	1 - 330	15 - 344	AA322484, AA501575, and AA339577
HNHEB47	4920	573339	1 - 185	15 - 199	
HNHEB88	4921	412655	1 - 128	15 - 142	
HNHEC40	4922	576507	1 - 347	15 - 361	
HNHEC51	4923	577306	1 - 406	15 - 420	
HNHEC96	4924	796463	1 - 356	15 - 370	
HNHED02	4925	920414	1 - 394	15 - 408	
HNHED51	4926	682992	1 - 673	15 - 687	
HNHED82	4927	576541	1 - 410	15 - 424	Z82249
HNHED83	4928	576540	1 - 317	15 - 331	
HNHED25	4929	576512	1 - 371	15 - 385	AI636627, AC004916, AC007878, AL008987, AL023799, AL080317, AP000959, AF064866, AC006965, AL096707, AC006441, AL035443, AC006487, AC006948, AL021329, AL022163, AF001905, AC005053, AC006324, AC007748, AC005826, AC007182, AC002476, AC005844, AC008170, AC003983, AC006368, and AF043945
HNHEE30	4930	576440	1 - 425	15 - 439	
HNHEE38	4931	860073	1 - 227	15 - 241	
HNHEE40	4932	576442	1 - 423	15 - 437	AF130343
HNHEE49	4933	576820	1 - 396	15 - 410	
HNHEF01	4934	916792	1 - 336	15 - 350	AL031447
HNHEF73	4935	576419	1 - 261	15 - 275	
HNHEG28	4936	586443	1 - 322	15 - 336	
HNHEG32	4937	576426	1 - 420	15 - 434	
HNHEG49	4938	576415	1 - 372	15 - 386	
HNHEG68	4939	861181	1 - 286	15 - 300	
HNHEG91	4940	506278	1 - 346	15 - 360	
HNHEH04	4941	582732	1 - 329	15 - 343	
HNHEH37	4942	490514	1 - 495	15 - 509	
HNHEH41	4943	578589	1 - 298	15 - 312	AA357626
HNHEH51	4944	678114	1 - 438	15 - 452	
HNHEH52	4945	860021	1 - 398	15 - 412	N57205, AI312090, AI312784, AC004885, AC004584, AC006511, AC003982, AL021391, and

				AL031003.	
HNHHE60	4946	576517	1 - 391	15 - 405	
HNHHE06	4947	523080	1 - 363	15 - 377	
HNHHE64	4948	576549	1 - 315	15 - 329	
HNHHE07	4949	953586	1 - 427	15 - 441	AA115161, AL121825, and AP00547.
HNHHE11	4950	967265	1 - 731	15 - 745	
HNHHE23	4951	576533	1 - 364	15 - 378	
HNHHE24	4952	916556	1 - 221	15 - 235	
HNHHE44	4953	716723	1 - 303	15 - 317	AC006464.
HNHHEJ57	4954	576535	1 - 234	15 - 248	
HNHHEJ85	4955	964882	1 - 149	15 - 163	
HNHHEK01	4956	916790	1 - 452	15 - 466	
HNHHEK63	4957	576819	1 - 453	15 - 467	AJ009794.
HNHHEK79	4958	954548	1 - 319	15 - 333	
HNHHEK83	4959	576420	1 - 325	15 - 339	
HNHHE09	4960	576418	1 - 309	15 - 323	
HNHHEL37	4961	713723	1 - 587	15 - 601	AJ223321.
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HNHEL42	4962	859830	1 - 448	15 - 462	
HNHEL44	4963	576423	1 - 254	15 - 268	
HNHEL53	4964	506281	1 - 360	15 - 374	
HNHEL82	4965	576430	1 - 579	15 - 593	
HNHEL94	4966	786930	1 - 410	15 - 424	
HNHEN04	4967	950725	1 - 350	15 - 364	
HNHEN34	4968	860047	1 - 343	15 - 357	
HNHEN35	4969	576424	1 - 339	15 - 353	
HNHEN83	4970	825334	1 - 594	15 - 608	
HNHEN85	4971	783480	1 - 332	15 - 346	
HNHEN02	4972	920420	1 - 420	15 - 434	
HNHEN16	4973	615402	1 - 420	15 - 434	
HNHEN56	4974	733521	1 - 432	15 - 446	
HNHEN66	4975	576544	1 - 432	15 - 446	
HNHEN76	4976	576542	1 - 437	15 - 451	
HNHEO29	4977	576548	1 - 427	15 - 441	
HNHEO43	4978	860046	1 - 690	15 - 704	
HNHEO83	4979	706683	1 - 196	15 - 210	
HNHEO84	4980	859992	1 - 420	15 - 434	
					T62624, AA018757, AA457771, AL043721, AL198376, AH471572, AW077923, AA482810, R83097, AL131163, AC005971, AC005288, AC006079, AL050309, U96629, AL031311, AC004814, AL022238, AC005899, AC005614, AC005011, AF000215, AC007546, AC004019, AC004150, AC003251, AC000257, AC007666, AC005602, AC005696, AC002344, U91326, AF196779, AL050332, AC004596, AP000030, AC003662, Z95331, D84394, AC005412, AC005034, AC006241, AC005531, AC004895, AL121653, Z82215, AC005703, AC012627, AC006049, AC004253, Z85987, AC007934, AC006312, AL080243, AC005823, Z85986, and AF196971.

					AC006379, Z83844, AC005858, AL049636, AP000555, AC007565, Z21688, AC007011, and AL080333.
					AF109076.
HNHEP49	4981	576453	1-326	15-340	
HNHEQ07	4982	953577	1-438	15-452	
HNHEQ46	4983	576437	1-297	15-311	
HNHEQ60	4984	576455	1-226	15-240	
HNHEQ70	4985	577188	1-423	15-437	
HNHEQ92	4986	576456	1-349	15-363	
HNHEQ94	4987	577303	1-236	15-250	
HNHER06	4988	918651	1-272	15-286	
HNHER21	4989	496484	1-517	15-531	AC004036.
HNHERS05	4990	932092	1-312	15-326	
HNHERS06	4991	859833	1-278	15-292	
HNHERS07	4992	953443	1-381	15-395	
HNHERS11	4993	967128	1-383	15-397	
HNHERS23	4994	675946	1-475	15-489	
HNHERS33	4995	576497	1-387	15-401	
HNHERS56	4996	881504	1-381	15-395	
HNHERS61	4997	973297	1-493	15-507	
					AA215634, AA825300, AA491266, AW136478, and AA282054.
					AW249240, and AC006261.
					AA093346, AI261785, AA714323, AC005498, AP000457, AL049641, AC005064, AL109764, AL049710, AC000119, AL049565, AC005019, AC004454, AL050401, AL049834, U66059, AC004842, AL035695, AC004741, AF101874, AC004908, AL132777, AL133312, AL049778, Z71182, AL135879, AL121790, AC007239, AL023806, AC004948, AL031663, AC004949, Z70227, AC005873, AB020861, AL021451, AC005199, AL031114, U01882, AC007444, and AC005502.
					AI011414, AI011415, X87904, and AB007867.
HNHERS81	4998	777979	1-370	15-384	
HNHERT11	4999	967127	1-388	15-402	
HNHERT17	5000	576746	1-430	15-444	
HNHERT24	5001	860006	1-368	15-382	
HNHERT25	5002	953410	1-373	15-387	
HNHERT57	5003	577360	1-445	15-459	
HNHERU50	5004	724449	1-342	15-356	
					TS7118, AC004966, AC007544, and AC007253.
					AA758275, H52638, AI445536, AA601208, AA354868, AW151201, AA209436, AI628200, AI628178, AA357911, T41164, T41132, AT145473, AA491361, AA311060, AW103782, AA569053, H40478, F23268, AA708305, AI859742, AI452836, H48734, M62264, AI459798, AC005231, AC005899, D87675, U85195, AC007221, AC006312, AC005049, AC005954, AC005736, AC005529, AI009181, AF134726, AL031589, AC005531, AC006120, AC007993, AL022336, AC016830, AP000255, AL033381, AL139054, AC005971, AP000135, AL024498,

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HNHEW95	5017	953566	1 - 382	15 - 396	AC005624.
HNHEX12	5018	970764	1 - 362	15 - 376	
HNHEX40	5019	711225	1 - 412	15 - 426	
HNHEX34	5020	575783	1 - 423	15 - 437	AI339302, AA534221, AA678404, N57939, AV007294, AI291560, AC005206, AC005667, AC004382, AC000353, AF030453, AC005088, AC004770, AC004835, AC007430, AL132777, AC03685, AL133355, AC005620, AC003012, AC022517, AC004598, AC005006, AC006449, AC003109, AL139054, AC004841, AC003684, AL022162, AL035450, AC004012, AC004985, AL035079, AC004447, AC005300, AC006126, AF196779, AL133500, AC002349, AC004228, AC002480, AL079342, AC004813, AC006101, AL049781, Z84476, AF139813, AL050341, AC004884, and AC0005790.
HNHEX66	5021	860036	1 - 410	15 - 424	AL049646, Z55781, and Z54485.
HNHEX77	5022	860037	1 - 418	15 - 432	
HNHEX39	5023	959668	1 - 401	15 - 415	
HNHEX63	5024	575741	1 - 384	15 - 398	AL047308.
HNHEX93	5025	575745	1 - 290	15 - 304	Z82217, U95626, AC007751, AC005863, AC002288, and AC008069.
HNHEZ07	5026	953438	1 - 141	15 - 155	
HNHEZ18	5027	575788	1 - 154	15 - 168	
HNHEZ19	5028	887442	1 - 293	15 - 307	AL119623, and AB020628.
HNHEFA05	5029	860033	1 - 506	15 - 520	
HNHEFA11	5030	967126	1 - 397	15 - 411	
HNHEFA35	5031	577302	1 - 398	15 - 412	
HNHEFA39	5032	576394	1 - 400	15 - 414	AW083544.
HNHEFB09	5033	575786	1 - 422	15 - 436	AI612930, AA365413, AA224238, AA531079, AA074342, AA077737, AA679532, AA582463, N25272, AL042927, AA484658, AA847702, H02485, AA779454, AW265090, AL682665, AW129526, AL061313, AC006285, AC016025, L78810, M63391, AC004000, AC018633, M87925, AL035587, AC005778, AC005060, AC005523, AC003695, AC002091, AC004635, AC007270, AC004981, AC005527, AL022336, AL139054, AC007637, AC004771, AC000072, AC006241, AL132777, AC007666, AC006387, AC006380, AF010400, AC005829, AL031662, AC004231, AP000065, AC003682, AC008125, AL080317, AC003025, AL021397, AC007676, AC005363, Z97054, AL096712, AF139813, AC004257, U89337, AC004643, U67220, Y18000, AL031431, L77569, AL049776, AC004228, AC007227, AL133448, AC005901, AL035071, AC006130, Z83846, AC005592, AB016195, AC004967, AC007787, AC004983, AC007688, AC001228, AP000228, AC003029, AC003684, AC012637, Z73420, AC019014, AC004760, AP000140, AC002464, AC005529, AC005949, AC002303, AC005220, AC008171, AC007314, AC005668, AC004150, AL020995, AC005520, AC005086, AL096561, AC006441, AC002365, AC002504, AC005274,

HNHF1B19	5034	668713	1 - 274	15 - 288	AP001053, AC006120, AL049565, AC007263, AC004821, AL049830, Z98752, AP000088, AC004067, AC005620, AL023807, AC000070, AC005051, AL096701, AC005164, AC006476, AL109758, AC005291, AC004363, AC007172, AL109628, AC003043, AC003013, AC006530, AC005207, AC004814, AC002477, AC006333, AL009743, AL009179, AC005369, AC006277, AP000172, AP000057, AP000125, AL0035460, Z85995, AC004230, AL117337, AC005755, AC007649, AC009516, U29895, AL121653, and AC006125.
HNHF1B27	5035	576865	1 - 415	15 - 429	AC002073.
HNHF1B32	5036	836006	1 - 432	15 - 446	AC007845, AC016025, and AC016026.
HNHF1B39	5037	575740	1 - 408	15 - 422	A1082315.
HNHF1B53	5038	728265	1 - 393	15 - 407	
HNHF1C34	5039	860027	1 - 376	15 - 390	
HNHF1C43	5040	583660	1 - 494	15 - 508	
HNHF1C60	5041	576438	1 - 522	15 - 536	L47334, AC004944, U95739, and AL118509.
HNHF1C61	5042	577185	1 - 380	15 - 394	
HNHF1C67	5043	576385	1 - 348	15 - 362	
HNHF1C78	5044	576435	1 - 376	15 - 390	A1525653, A1525669, and A1557222.
HNHF1C92	5045	577240	1 - 326	15 - 340	Y18000, AC004882, and AC005529.
HNHF1D46	5046	576796	1 - 370	15 - 384	
HNHF1D88	5047	506354	1 - 345	15 - 359	AC004556.
HNHF1E07	5048	953585	1 - 68	15 - 82	AF002994.
HNHF1E40	5049	576431	1 - 404	15 - 418	
HNHF1E69	5050	577244	1 - 329	15 - 343	
HNHF1F08	5051	860229	1 - 685	15 - 699	AA506952, T52745, A1280574, AA832016, A1270177, AA831801, H81732, AA350886, M78131, P23264, A1554725, A1436330, AA520105, AA602906, A1249365, AA633424, A1568659, AW439703, N99245, AA054639, A1928890, AA730035, AW020150, AW151541, A1521525, A1362694, AA635433, A1298079, A1653525, AW006088, AW088130, AA809153, A1611987, AL046416, AW304580, AL040374, AW238712, A1056537, P07564, AA553394, AA622801, A1753672, AL040816, R70884, A1345497, AA932407, AA015948, A1610439, AA525331, AA650447, A1871913, R70883, AA525293, AA365980, AA508036, A1918419, AA811954, A1251576, AW407632, AA937809, AA351808, A1118925, A1754567, A1619889, AW102811, A1754105, A1358712, A1755214, A1743968, A1096874, A1686563, A1040273, A1306232, F00688, AA838091, AA806804, AW274191, A1369972, A1990666, AL041375, R87135, A1863279, A1635440, AA282951, A1619337, A1661090, F50310, A1479068, A16189113, AA378474, AA533054, AA834764, AA057522, AA594719, AA528744, AA525522, A1207422, A1421950, AL079734, AA454504, AL079339, Z82244, AC005338, AC020663, AL117355, AF091512.

				AL049591, Z97876, AL079340, AL121595, AL021707, AC002994, AL008635, AL034402, AL035659, AC004881, AF111168, AL003147, Z84484, D87675, AC005887, AC003957, AC004805, AL031985, AL031431, AC005902, AC007066, AP000141, Z85987, AC005695, AL031278, AC005828, D86995, AL121603, AP000088, AC007688, Z83826, AC005181, AL0318633, AL022165, AF109907, AC005067, AC007773, AL096775, AF038458, AC006360, AC005089, AC004263, AC004520, AC004997, AB003151, AL008626, AL122007, AL008719, AL049792, AC005932, AL079305, AL109829, AL035461, AL136295, AC006343, AC005585, AC005578, AC006960, AL031662, AL022326, AC006026, Z83847, Z95118, AL035460, AC006196, AL024507, AC003046, AL121658, AP000689, AB014085, AC004187, AP000515, AB020868, AL035413, AC002073, AL035086, AC006064, AC006312, AC004941, AL135744, AL117693, AC002351, AL049829, AC005912, Z98743, AC007025, AC009294, AL031848, AP000108, AB001523, AC007541, AL031286, L35532, AC002400, AC005017, AC005375, AC002069, AL031280, X64467, AC006441, AL049844, AC005081, AC004230, AL031592, AC002316, AC005358, AC005215, AL031904, AL080243, AL031776, AL031984, AF099810, AC007114, AL022313, AC002395, AL022394, AC004686, AC007546, AC005821, AC007899, AC007792, AC007565, AC006557, AF064857, AC004383, AC004797, AL133245, AC007536, Z82976, Z99943, AC004712, AL031686, AC004638, AC004148, AL049694, AL079342, AC007036, AC005031, AP000031, AC007388, Z97053, AL109839, L18750, AC003025, AC005525, AC007157, AP000255, AC005781, L11910, Z86064, AC006004, U62631, AC005746, AC004241, AC004675, AC002310, AL034554, AF139813, AF141309, AP001054, Z83838, AC005537, AC004593, AC005212, AC003097, AF207550, AC004531, AC005018, U80017, AF126403, AL021391, AL080313, AL031276, AL031186, AC005519, Z49258, AC004577, AP001063, AC004913, AL023575, AP000213, AF088219, L47334, AL117258, AC004527, AC004979, AP000501, AC005268, AC005220, AC006480, AC004042, AF047825, Z82205, AC002107, AC005786, Z84483, AL049650, AC005666, AC005220, AC006480, AC004228, AC004228, AC004477, AP000135, AC003007, U95742, AF001550, AL133382, AC004216, AC010200, AP000303, AP000114, AP000046, AC006959, Z98036, U8031778, AF016898, AL050334, AP067844, U63721, AC004938, AC007227, Z99716, U85195, U08988, AC012085, AL031685, AL049631, AC005587, AC006287, AL035249, AC004253, AL035398, AL021394, AL050341, AL009172, AC003012, and AP000473.
HNNHF21	5052	625613	1 - 326	15 - 340
HNNHF29	5053	576412	1 - 268	15 - 282
HNNHF56	5054	576432	1 - 434	15 - 448
HNNHFG07	5055	953569	1 - 386	15 - 400
HNNHFG11	5056	967255	1 - 316	15 - 330
HNNHFG37	5057	658459	1 - 393	15 - 407
HNNHFG94	5058	720292	1 - 389	15 - 403

HNHFH121	5059	575785	1 - 576	15 - 590	N28488.
HNHFH156	5060	575784	1 - 243	15 - 257	
HNHFH178	5061	773610	1 - 386	15 - 400	
HNHFH69	5062	575747	1 - 128	15 - 142	AC007226, U95743, AC006363, and AI 022345.
HNHFH88	5063	575751	1 - 343	15 - 357	
HNHFH95	5064	577328	1 - 434	15 - 448	
HNHFH45	5065	720757	1 - 439	15 - 453	
HNHFH67	5066	699523	1 - 444	15 - 458	AA293828, and H66294.
HNHFH37	5067	576386	1 - 389	15 - 403	
HNHFH77	5068	970770	1 - 440	15 - 454	R43540, R48276, R48377, R43540, H14811, H14844, H25270, R98805, H48383, H61221, N29968, W23460, W73630, W73678, W93886, AA031537, AA085279, AA166981, AA195032, AA195160, AA211848, AA252180, AA291950, AA470617, AA527697, AA527705, AA523619, AA610324, AA610375, AA631087, AA639486, AA662219, AA761630, AA769549, AA836835, AA857900, AA877434, AA887793, AA911923, AA919116, AI031861, AI088765, AI097438, AA242793, AA291420, AA434487, AA670443, AA680029, AA434391, AA707307, AA719146, AA723473, AA725011, AA780009, AA854072, AA854177, AA904890, AA927579, AI026017, AI026142, AI027032, AI039424, AI082533, AI092443, AI095580, D45614, AI306736, AI311850, AI344587, AI346859, AI401696, AI475602, AI491923, AI560607, AI561040, AI565775, AI497986, AI567445, AI582162, AI624489, AI127220, AI129847, AI131403, AI216030, AI218681, AI221771, AI240379, AI659547, AI538610, AI539637, AI275475, AI332813, AI349444, AI350915, AI389172, AI682495, AI684064, AI689701, AI763230, AI829821, AI831189, AI831933, AI870019, AI870152, AI888031, AI811628, AI914567, AI918439, AI921759, AI937559, AI952650, AI952779, AW004929, AW005538, and AW024659.
HNHFH48	5069	664588	1 - 294	15 - 308	AI007751, AC010517, AI007752, D29748, AI130757, S67971, and AI130755.
HNHFH82	5070	576428	1 - 386	15 - 400	AI021528.
HNHFH01	5071	916787	1 - 290	15 - 304	AI096757.
HNHFH02	5072	577331	1 - 346	15 - 360	
HNHFH30	5073	691083	1 - 398	15 - 412	
HNHFH52	5074	727258	1 - 216	15 - 230	
HNHFH95	5075	761672	1 - 316	15 - 330	
HNHFH045	5076	576408	1 - 351	15 - 365	
HNHFH048	5077	707311	1 - 624	15 - 638	H05570, and AC005146.
HNHFH09	5078	860013	1 - 299	15 - 313	AI031590.
HNHFH10	5079	964849	1 - 440	15 - 454	
HNHFH01	5080	916773	1 - 338	15 - 352	
HNHFH919	5081	418108	1 - 149	15 - 163	

HNHFQ30	5082	692807	1 - 272	15 - 286	
HNHFQ75	5083	766595	1 - 343	15 - 357	
HNHFQ88	5084	576398	1 - 436	15 - 450	
HNHFQ92	5085	576400	1 - 139	15 - 153	
HNHFR12	5086	860003	1 - 303	15 - 317	
HNHFR22	5087	964716	1 - 430	15 - 444	
HNHFR24	5088	577330	1 - 322	15 - 336	
HNHFR67	5089	751787	1 - 338	15 - 352	
HNHFS03	5090	924610	1 - 511	15 - 525	
HNHFS79	5091	734798	1 - 416	15 - 430	
HNHFL09	5092	625726	1 - 433	15 - 447	
HNHFL35	5093	707335	1 - 298	15 - 312	
HNHFL43	5094	920844	1 - 432	15 - 446	
HNHFL57	5095	860002	1 - 435	15 - 449	
AA60685, AA804925, AI289850, F29541, AA601195, AI471691, AA728937, AL133448, AC005722, AC004895, AC005529, AC005488, AF168926, AF109907, Z83822, AC005015, AC004882, AF207550, AC006285, AF033356, AC006071, AF000689, AF0003151, AC005994, AC007888, AC004693, AI109798, AC005412, AC009247, AC006946, AL031311, AL096791, AC005837, Z95331, AC007263, AC004967, AC005089, AL031666, Z93017, AL135783, AC006449, AC006277, AL022328, AF000049, AP000116, Z95116, AC000353, AF000311, AC006538, Z83844, AC007216, AL035684, AC002369, AC006120, AC004905, AC006023, AF064861, AC002302, AC003043, AL078638, AL008718, AP000557, AD000091, AC005280, AC007546, AL021707, AL133246, AL035072, AC005206, AL049779, AP000036, AC005081, AC004150, AC000134, AC004383, AC005520, AP000343, AC007285, AL023575, AL135960, AJ131016, Z98946, AC005667, AC004453, AC007151, AL035423, Z86090, AC004682, I02698, U73636, AL132777, AC005231, AC002996, AC002197, AP000352, AC005736, AL096701, AL022476, AC005180, AC005778, AF000031, AL009181, U82668, AC004228, AC005952, AC004859, Z84474, AC006430, AC004821, AC003950, AL031595, AC004985, U47924, U95742, Z98036, AC003670, AL031005, and AL049569.					
HNHFR24	5088	577330	1 - 322	15 - 336	
HNHFR67	5089	751787	1 - 338	15 - 352	
HNHFS03	5090	924610	1 - 511	15 - 525	
HNHFS79	5091	734798	1 - 416	15 - 430	
HNHFL09	5092	625726	1 - 433	15 - 447	
HNHFL35	5093	707335	1 - 298	15 - 312	
HNHFL43	5094	920844	1 - 432	15 - 446	
HNHFL57	5095	860002	1 - 435	15 - 449	
AA314891, AW008169, AI433104, AA302661, AA541532, AI281561, AA338238, AI133514, AA568204, AA570740, AA483606, AI571538, AI249683, AI138329, AI338237, H68360, AI491765, AI189682, AA630854, AA206230, AA664604, AI255246, AW023111, AI36771, AW084967, AA493947, AL041375, H8769, AA491767, AA518939, AA714110, AA846923, H84412, AA638829, AI792529, AI054193, T90477, AA632765, AL660972, AL161492, AA857812, AA729919, AA493808, AI538236, AA297208, AC005412, AC006409, AL035461, AI012008, AC005088, Z83844, Z95115, AC002351, U91321, AC005696, AC005529, AL049710, AC004084, AC004796, AF172277, AL133312, AC003070, AC006205, AL049569, AL031432,					

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				AA045947, AA367403, AC005702, AC005562, and AC003958.
				AA075754, AA618286, AA295899, AA295893, AA774098, AA354695, AB859744, AA483141, AW327555, AA633892, AA340226, AA569448, AA834799, AF034176, AA376558, AF732911, AA171730, AA225634, AA825954, AA452323, AA730795, AA496268, T06805, F16409.

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HNHFV29	5103	663912	1 - 410	15 - 424
HNHFV22	5104	674638	1 - 189	15 - 203
HNHFV35	5105	668656	1 - 344	15 - 358
HNHFV36	5106	716628	1 - 402	15 - 416
HNHFV68	5107	753045	1 - 96	15 - 110
HNHFV70	5108	756459	1 - 381	15 - 395
HNHFV89	5109	712347	1 - 413	15 - 427

HNHFY21	5110	670946	1 - 408	15 - 422	
HNHFY95	5111	734764	1 - 363	15 - 377	
HNHGA24	5112	967093	1 - 433	15 - 447	
HNHGA33	5113	702461	1 - 189	15 - 203	
HNHGA46	5114	719073	1 - 359	15 - 373	
AF095901, AC005971, and AC003006.					
AA579437, R98945, A1168274, A1092694, T68597, AW161893, AW438907, AA618172, A1085078, AA632695, H27102, AC007676, U91326, Z49154, AC005516, AP000066, Z98941, AL031685, AC004056, AC006449, AL031680, AC005921, Z84484, AC007559, M63796, AC002400, AL002476, AC002302, AF024533, AC006965, AC005940, AC005479, AL121655, AL035495, AP000349, AC005102, AL050337, AC003962, L44140, AC005156, AL139054, AC003689, AP001549, AC006544, AC005332, AC002565, AC006581, AL035086, AC005785, AC006076, AL031681, AL049709, AC006572, AC007637, AC005523, AC004584, AL009031, and AB0017567					
HNHGB83	5115	781205	1 - 325	15 - 339	
AA604326, AA483223, AA513850, AA486580, AA533036, AA548511, F25695, AA824655, AA127636, AA641199, AA3568778, AL044438, AA601355, AA670468, AA481050, AA397572, AA486885, AA824654, AA368679, AA678443, M77868, AA081909, AA488249, NZ0967, AA346575, AA623002, AA377906, AA973803, AA446657, NZ2533, AA347114, AA906889, AA649722, AA720691, H86097, AA669840, AA858197, AA357552, AA503473, AA928904, TS3128, AA341336, AA643469, AA490183, W96048, AA078691, AA653964, AA805860, T28708, AA740921, AA458736, AA702745, AA678436, AA059472, A1002796, AA678772, AA644538, AA810370, F35659, AA158301, AA788883, AA604854, AL134347, F09736, AA204718, R32415, AA319830, AA610420, AA602528, AA304977, R84296, AA830996, NZ0219, AA704643, AA325597, AA480790, AA235466, AA158328, AA330380, AA525151, T94817, AA825299, AA833792, AA053551, AA834755, AA678499, AA633094, AA52843, H96850, T16056, AA484153, AA664135, TS5236, AA132914, AA702293, AA437161, AA630606, AA604107, AA629571, AA280632, AL134267, R97934, R84309, AA812433, AA630925, D57369, R65889, AA524809, AA526757, R92288, AA715263, R84303, H02877, W16381, AA603156, AA439873, AL648558, AA826793, AA347170, H11124, AA287640, AA608595, AA994578, AA639248, AA584749, H02135, N69316, T49241, AA434388, H79151, H80306, AL037050, AW069807, AA483780, AA143490, T67750, AA053635, AA172191, AA774184, AL190895, AA632548, T15897, AA515909, AA605032, AL167643, VW390062, AA494025, AA908857, AA524838, AA654761, AA846829, AB980096, AA405493, AA557854, AL273528, AA569167, AL251250, AL284881, AA521335, AA574110, AC0066312, AF003529, AC002384, AF029308, AC004690, Z95124, Z95331, AF227510, AL031965, AC003973, AL049837, AC006560, AC006548, AF130343, AC006511, AL136520, AC004075, AC003003, AL121823, AL031054, Z97206, AC004968, AC005191, AC005181, AC007372, Z68870, AP000507, AC007161, AB012083, AP000086, AC005690, AC008069, AC004006, Z83841, AC004614, AC005036, AB020868, AL132323, AL049562, AL09654, AC009286, AF070718, AP000166, AL121871,					



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HNHGB96	5116	784362	1 - 406	15 - 420	
HNHGC13	5117	927065	1 - 344	15 - 358	
HNHGC35	5118	707337	1 - 310	15 - 324	AL804902, AC006117, AC007421, and AF051976.
HNHGC41	5119	711654	1 - 259	15 - 273	HA0460, T87387, T99479, T79930, T98889, R45850, and H40461.
HNHGC62	5120	733745	1 - 641	15 - 655	AF798767, AF762354, AA960878, AA994187, AL150216, AL203673, AW300455, AL669778, AL638227, AL629021, AL032379, AW206145, AL126900, AL652606, AL949596, AL200754, AL652758, AL365965, AA400904, AA935607, AA628104, AA913740, AA682231, AA442250, and AA970252.
HNHGD07	5121	953416	1 - 412	15 - 426	
HNHGD14	5122	920149	1 - 425	15 - 439	FE1867, AL250552, AL251034, AL254770, AL284543, AL054090, AL251284, AL251203, AL224626, AL246061, AL090334, AL251241, AW303098, AA502098, AL312533, AL135605, AW339422, AF798041, AW749541, AA491814, T99717, AA356310, T55707, AF746959, AA492114, AL249886, AW747480, AL358008, AC004778, AC007201, AL096791, Z93930, Z98200, AL009181, Z82208, AC005778, AL031848, AL109798, AL078476, AC006130, AC005841, AC007546, AL035681, AL049766, AL034379, AC005387, AC005776, AC007100, AC005837,
HNHGD50	5123	667930	1 - 341	15 - 355	

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HNHGD51	5124	934632	1 - 392	15 - 406	
HNHGD68	5125	733053	1 - 393	15 - 407	
HNHGD84	5126	671077	1 - 414	15 - 428	AC005242.
HNHGE09	5127	939727	1 - 633	15 - 647	T03269, D58283, D80193, D59927, D80166, D80195, D51423, D59619, D80210, D51799, D80391, D80240, D80253, D80043, D80227, D59839, D80212, D80196, D80188, D80219, D80038, D80269, C14429, D59889, D81030, D80366, D59502, D57483, D80022, D59275, D80045, D59610, AW178893, D80378, D50979, D50995, D80024, D59787, D80241, D51097, C14014, C75259, D80164, C14331, D80134, A905856, D59467, AW177440, C14389, C15076, AW179328, AW178775, AA305409, AW378532, D51060, AW352158, AW177501, AW177511, AW352117, D80949, D80168, AW178762, D58253, D51079, D51022, AW176467, AW375405, AW360811, AA305578, AW377671, AW366296, D80251, AW360844, AW360817, AW360834, D81026, AW375406, AW278534, D80248, AW179332, AW377672, AW179023, AW178905,

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HNHGE27	5128	683432	1 - 359	15 - 373	AA488743, AA308092, AA676628, AL031311, AP000347, AP000346, AC005210, AC005839, AL031681, AC007227, AC005105, AC004139, AL109759, U85105, AE000658, AL022302, Z95116, AL031671, AL034402, AC004010, AC005225, AC005519, AL031680, AL109963, AL021069, AC004920, AC003024, Z96811, and AC002544.
HNHGE43	5129	715304	1 - 315	15 - 329	
HNHGE64	5130	746605	1 - 303	15 - 317	
HNHGE14	5131	835984	1 - 419	15 - 433	
HNHGE21	5132	670956	1 - 399	15 - 413	
HNHGE37	5133	708708	1 - 520	15 - 534	
HNHGE45	5134	859852	1 - 372	15 - 386	
HNHGE46	5135	705128	1 - 411	15 - 425	W40172, AA129812, AA382562, AA057128, N44954, W93959, W96112, W65434, AA321463, R91613, AA010986, AA311729, AA455863, AA355485, AA047510, AA133759, T77131, T97680, W44481, Z60894, and AF191020.
HNHGE85	5136	761811	1 - 356	15 - 370	AA745297, AL107744, AW169038, AL170805, AL037777, AA528574, AA328503, R08192, AW304536, AW338042, H01243, AL538236, R99533, H60827, AA630122, W03330, AA434364, AC005089, AL049591, AL021391, AC005881, AC004129, AP000555, U52112, Z93241, AL021707, AF064861, AC002498, AC006080, AC003025, AF139813, AC005666, AC006277, AC005048, AF165926, AC003101, AC007371, AC005952, AL031668, AC005389, AL031276, AC005376, AC005826, AC006379, AC006948, AC005932, AP000243, AP000126, AP000204, AF047825, AC006241, AC005071, AC005736, AC005546, AF051769, AC007073, AP000623, AL035423, AL031602, AC003982, AL133312, AL049569, L44140, AC007934, AF024534, AP000279, AL031672, U95626, AL078584, AL022320, AC005624, AP00106, AP000038.

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HNHGF90	5137	730957	1 - 392	15 - 406
HNHGF91	5138	750389	1 - 418	15 - 432
HNHGG06	5139	935530	1 - 392	15 - 406
HNHGG73	5140	764446	1 - 253	15 - 267
HNHGG76	5141	746607	1 - 246	15 - 260
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HNHGH89	5142	772213	1 - 343	15 - 357	
HNHGH93	5143	702135	1 - 565	15 - 579	
HNHGH95	5144	760386	1 - 399	15 - 413	AC004894.
HNHGH02	5145	920147	1 - 520	15 - 534	
HNHGH20	5146	959499	1 - 391	15 - 405	
HNHGH42	5147	713036	1 - 418	15 - 432	AA488395, AL580652, AW269488, H88666, AA491814, AA177061, AL499938, AL184226, AL276100, AP216490, AA381903, AW406659, AL589230, AW088202, AA448231, AA452563, AW238278, AW103758, AW261871, AW406162, AL119691, AB87483, AA503238, AA469451, A1859251, F29989, AW276827, AL046409, AL471543, F17555, AL889923, AL053790, AL1567674, AL499181, AA503284, AL679045, AA493708, AL138265, AL345518, AA654979, AL471481.

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HNHGJ05	5148	707336	1 - 422	15 - 436
HNHGJ79	5149	775218	1 - 307	15 - 321
HNHGJ81	5150	576279	1 - 418	15 - 432
HNHGJ03	5151	968076	1 - 309	15 - 323
HNHGJ09	5152	625624	1 - 394	15 - 408
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HNHGI39	5155	850088	1 - 456	15 - 470	
HNHGI65	5156	750269	1 - 405	15 - 419	
HNHGI81	5157	777958	1 - 616	15 - 630	
HNHGIK05	5158	935525	1 - 308	15 - 322	
HNHGIK24	5159	783674	1 - 426	15 - 440	AF064862, and AF064865.
HNHGIK70	5160	728593	1 - 409	15 - 423	
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HNHGN17	5161	663923	1 - 321	15 - 335	
HNHGO21	5162	670955	1 - 276	15 - 290	
HNHGO65	5163	750267	1 - 119	15 - 133	
HNHGO68	5164	732370	1 - 363	15 - 377	
HNHGP08	5165	839964	1 - 306	15 - 120	
HNHGP31	5166	698047	1 - 528	15 - 542	
HNHGP32	5167	699292	1 - 434	15 - 448	
HNHGP40	5168	916551	1 - 428	15 - 442	
HNHGP73	5169	934446	1 - 865	15 - 879	F24281, AC005180, AC004178, AL035542, AL035086, Z95114, AP000305, AC005324, AP000047, AP000115, AL030996, and AL109865.
HNHGP83	5170	780328	1 - 546	15 - 560	
HNHGO02	5171	920146	1 - 433	15 - 447	
HNHGO25	5172	678151	1 - 434	15 - 448	
HNHGO28	5173	859965	1 - 433	15 - 447	
HNHGO49	5174	573340	1 - 459	15 - 473	AC005191.
HNHGO79	5175	562748	1 - 1013	15 - 1027	AB62442, AW131356, AA533545, AW023111, AA714110, AI251429, AA947369, AI921296, AI338117, AI926706, AA610233, AL109827, AC005189, Z85987, AL049636, AP000096, AL133245, AC005082, AC004013, AC005071, AC005324, AC005484, Z84480, AL023575, AC004797, AP000240, AJ010770, AC005102, L44140, AL031667, AC004149, AC004647,

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HNHGR35	5176	698501	1 - 374	15 - 388	
HNHGR43	5177	918711	1 - 330	15 - 344	
HNHGS34	5178	706671	1 - 422	15 - 436	Z68885, and AL117391.
HNHGT37	5179	708706	1 - 276	15 - 290	
HNHGT51	5180	859962	1 - 354	15 - 368	
HNHGT64	5181	725710	1 - 346	15 - 360	
HNHGT74	5182	705602	1 - 433	15 - 447	
HNHGU19	5183	668693	1 - 407	15 - 421	
					AA985391, AW007854, AI821306, AA749351, AI159836, AW189113, AC005526, Z86090, AC005088, AF001549, AC007740, AC005562, AF030453, AC002425, AL033527, AL080243, AC005089, AF000066, Z85987, AL022165, AC004882, AC008044, AC004953, AP000347, AC008124, AC005969, AC003950, AC008040, AP000249, AP000210, AP000132, AD000684, U91322, AL022336, AC007425, AL035072, AC002302, Z75407, AL110502, AC005102, AL251973, Z93023, AL049576, AC006111, AC007192, AC004876, AF067844, AL031295, AL088726, AC004585, AL021528, AC003071, AC009731, Z78730, AC002352, AC005399, AL022238, AC005231, AC010170, AP000501, AC002554, AC007263, and Z95017.
HNHGU41	5184	791822	1 - 487	15 - 501	
HNHGU44	5185	716634	1 - 443	15 - 457	
HNHGU84	5186	783041	1 - 434	15 - 58	
HNHGU89	5187	761837	1 - 434	15 - 448	
HNHGV18	5188	666473	1 - 391	15 - 405	
HNHGV22	5189	674653	1 - 345	15 - 359	
HNHGV29	5190	421819	1 - 310	15 - 324	AL020994.
HNHGV45	5191	754053	1 - 414	15 - 428	
HNHGV91	5192	706695	1 - 388	15 - 402	AL022068.

HNHGX33	5193	496224	1 - 315	15 - 379	AP000271, AP000104, and AF042089.
HNHGX40	5194	687120	1 - 344	15 - 358	
HNHGX41	5195	711657	1 - 650	15 - 664	
HNHGX52	5196	727175	1 - 425	15 - 439	
HNHGX55	5197	683523	1 - 296	15 - 310	
HNHGX83	5198	781196	1 - 550	15 - 564	AC006079.
HNHG13	5199	657253	1 - 397	15 - 411	AL031732.
HNHG17	5200	663921	1 - 405	15 - 419	
HNHG18	5201	859951	1 - 409	15 - 423	
HNHG19	5202	835531	1 - 422	15 - 436	
HNHG26	5203	859949	1 - 438	15 - 452	
HNHG29	5204	690666	1 - 429	15 - 443	L34981, Z68275, AL117391, and L33995.
HNHG42	5205	713797	1 - 409	15 - 423	
HNHG47	5206	720360	1 - 400	15 - 414	T02826.
HNHG79	5207	775209	1 - 405	15 - 419	
HNHG86	5208	785516	1 - 238	15 - 252	
HNHG91	5209	840129	1 - 419	15 - 433	
HNHG236	5210	708131	1 - 71	15 - 85	
HNHGZ63	5211	742594	1 - 522	15 - 536	
HNHHA21	5212	496227	1 - 374	15 - 388	
HNHHA32	5213	669915	1 - 328	15 - 342	AC004819.
HNHHA37	5214	708709	1 - 188	15 - 202	
HNHHA68	5215	753047	1 - 613	15 - 627	
HNHHA91	5216	790198	1 - 271	15 - 285	
HNHHA11	5217	964993	1 - 147	15 - 161	
HNHHA12	5218	970719	1 - 363	15 - 377	AL136297.
HNHHA24	5219	677224	1 - 351	15 - 365	AW088875, AW090733, AW089149, AD241940, A1364268, R41807, H06383, AW016452, AA598689, A1863108, AA599060, A1091148, A1693507, A1424991, and Z38240.
HNHHA64	5220	702697	1 - 766	15 - 780	N90568, A1554312, AP000365, and AP000548.
HNHHA12	5221	967088	1 - 290	15 - 304	
HNHHA17	5222	860117	1 - 318	15 - 332	
HNHHA29	5223	713800	1 - 359	15 - 373	AA663387, and AA679164.
HNHHA33	5224	699291	1 - 172	15 - 186	AL080239.
HNHHA36	5225	707340	1 - 218	15 - 232	
HNHHA46	5226	719068	1 - 240	15 - 254	
HNHHA58	5227	736069	1 - 227	15 - 241	

HNHHC83	5228	781197	1 - 425	15 - 439	
HNHHD35	5229	707338	1 - 423	15 - 437	
HNHHD61	5230	741857	1 - 405	15 - 419	
HNHHD67	5231	751663	1 - 305	15 - 319	
HNHHD82	5232	779893	1 - 419	15 - 433	
HNHHE07	5233	953408	1 - 364	15 - 378	
HNHHE48	5234	630223	1 - 307	15 - 321	
HNHHE63	5235	745100	1 - 281	15 - 295	
HNHHE80	5236	774041	1 - 301	15 - 315	
HNHHF01	5237	916546	1 - 306	15 - 320	AI.079342.
HNHHF33	5238	698502	1 - 249	15 - 263	
HNHHF51	5239	698490	1 - 384	15 - 398	
HNHHF56	5240	496204	1 - 349	15 - 363	AC006427.
HNHHF58	5241	859946	1 - 419	15 - 433	
HNHHF63	5242	745095	1 - 361	15 - 375	
HNHHF79	5243	775205	1 - 421	15 - 435	AI287766, AI124798, AA535216, AA715173, AA715075, AA829056, H50970, AI783911, AI560085, AI583532, AI754286, AA3350886, AA598731, AW438850, AW438662, AW302048, AA568314, AA828844, Z97054, AC005874, AF134471, U96629, AL024507, AC007056, AP000352, D87675, AL109798, AC009510, AL133500, AC009946, AC002302, AL022726, AL034549, AC005089, AL049569, U95742, AC005488, AP000511, AC007216, AC007199, AC005037, AC012085, AF001550, AF205588, AL008721, AP000108, AP000040, AC004554, AL034548, AP000030, AC008372, AP000116, AC003051, AC005899, AC006449, AP000089, AC010209, AC006312, AC004372, AL109758, AC007151, AC003665, AC004797, AC009516, AC016027, U63630, AC006079, AL031427, AC002492, AC004927, AF030453, AC016830, AC008072, AC005088, AC005377, Z83844, AC007637, AL035632, Z82194, AC007450, AC002477, AC006014, AC004983, AC004895, AC002463, AC003007, AC000134, Z85986, AC002476, AP000501, AC005952, AC002352, AL139054, AF091512, AC004686, AL035420, AP000101, AL133245, AC007314, AC008394, AF053356, AF124731, AL132642, AC004675, AC004662, AC005871, U91321, AE000638, AC005695, AL031737, AP000115, AL022302, AC007263, AC006013, AC003687, AC005919, Z95114, AC005632, AC003036, AC007227, AP000694, AC004638, AP000952, AF195638, AF088219, AC004834, AL031281, AC007283, AC005484, AC007226, AC005224, AL031985, AC004966, AC006536, AC004765, AC002554, AP000085, AC005187, AC004796, AC005829, AC005921, AC004031, AC007198, AF067844, AC005972, AC006059, AC006006, AC004777, AC005911, AC004817, AC010206, AF106564, AC005288, AC005553, AC003668, AC020663, AC008044, AC004876, AL022400, AC005520, AC005969, AC006571, Z82215, AL021878, AF118808, AC006509, AJ003147, Z95152.

HNHHF96	5244	796402	1 - 315	15 - 329	AC005757, AC000041, AF111168, AL022311, AL050318, AC005291, AC000025, AC002400, AC005529, AC004828, AL121892, AP000704, AP000264, AL050308, AC002316, AC005527, AL109863, AC005250, AP000845, AL011930, AC000111, AL117339, AC003837, U95739, AL022318, AC004707, AC007566, AC004583, Z83822, AL031599, AC005482, AP000141, AC005231, AC004974, AP000035, AC005082, AL0049758, AL035089, AC007429, AL022156, AC004685, AL035587, AL050332, AF207550, AD000092, AC005086, AP000356, AL050307, AP000113, AC005048, AP000313, AC005752, AL035249, U47924, AC004672, AC005409, AC004051, AL117337, AC004622, AL031255, AF111169, AC006205, AC005186, AP000553, AC008719, AC002558, AC004000, AL031639, AC002312, AL031311, AL049851, AC004996, AC009399, AL020997, AL031685, AL135744, AL031228, AC007388, AL079342, AC006160, and AC006538.
HNHHG47	5245	720361	1 - 300	15 - 314	
HNHHG50	5246	724411	1 - 399	15 - 413	
HNHHG65	5247	750266	1 - 237	15 - 251	
HNHHH13	5248	657251	1 - 254	15 - 268	
HNHHH42	5249	713796	1 - 357	15 - 371	
HNHHH57	5250	734793	1 - 382	15 - 396	AL678676, AL821937, AL754286, W45073, H05449, C75526, AA287259, C75403, AF001549, AC006101, AC006111, AC005736, AL031220, AC004703, AC005399, AC006449, AC007731, Z95023, AC005500, AL022476, AC005576, AC004030, AL132777, U62293, U63721, AC004878, AC00615, AL024498, AC005180, AC007564, Z95114, AC005089, AC006130, AC003962, AL031228, AC005037, AC005189, AL049694, AL049830, AC005829, AL133500, AC006312, AC005288, Z93930, AC005537, AC004889, AC003012, U91318, AC004887, AC007384, AL022336, AL049776, AC004895, AL139054, AL121603, AP000133, AF111168, AL035086, AC005071, AL246003, AC006960, AL121658, AC004832, AF003528, AP000512, AC0031076, AC004859, L44140, AC006241, AC006030, AF067844, AC005015, AL080243, AC005914, AC002316, AF118808, AL020997, AC005520, AL021391, AP000300, AF031078, AL121653, AC005562, AL031432, AF030876, AC005911, AL022721, AL024507, AP000694, AF064861, AC004491, AC005088, AL079342, AC005206, AP000355, AC005280, AF205588, AL031295, AC007363, AC005412, AC005094, AP000045, AP000113, AP000116, AC004216, AC004408, AC005667, AC005516, AL008718, AL023284, AC004638, AP000555, AC007057, AL049872, AL031905, AC005358, AC006417, AC006017, AC005971, AC006071, AC004098, AC004967, and AL133445.
HNHHI10	5251	964659	1 - 227	15 - 241	Z97205.
HNHHI28	5252	859941	1 - 415	15 - 429	AL109657.
HNHHI34	5253	706099	1 - 400	15 - 414	
HNHHI36	5254	708132	1 - 427	15 - 441	AL580362, AA676819, AA677954, AL831913, AL628458, and AL031123.

HNHH165	5255	750263	1 - 374	15 - 388	
					AW238278, AL048925, AA54177, AW023672, AL493708, AL119691, AA101689, N23896, A1567076, AA515909, R24887, A1801482, A1246796, AA579179, AL281881, AW407578, AW341900, AW270270, AA503473, A1371249, AA613232, A1733856, AW062724, A1567372, AW131249, AW419262, AA603362, AW072587, AA507824, A1860020, A1061313, A1555206, AA559241, A1184226, AA483223, AA747480, AA098993, AA720702, AA578481, A1482720, AA587991, AA642060, A1056177, A1279417, F34498, A1279037, F1933714, A1148277, A173735, AA326441, AA614163, AA613345, AA446657, A162489, AA805846, AA719073, R77905, AA87499, AW406162, A1220687, A122023, AC007676, AL021154, AC007684, AC006285, AP000556, AC004167, AC006480, AL022313, AL049553, AC012627, AC006538, AC004526, Z15025, A121757, A121603, A1133371, AC002070, A1035089, AL096791, AC006312, AC000026, AL035079, AC005358, AC003029, AC004638, Z95152, AC002059, AL031667, AC005736, AC005089, AC007537, AC003046, AC003553, AL020997, Z74739, AC004020, AC007055, AC004817, AL008718, AP000151, AP000090, AL109628, AC007226, AC007277, A1003147, Z73887, AP001038, AL008583, AC000003, AC002525, A1135744, AL021808, AP009662, AL035249, AC005667, AC007066, AC007546, AL049713, U07563, AL049776, AC006511, AC004583, AP000134, AP000212, AC005102, AC005071, AC005940, AL031431, AC005520, U62317, AC005971, AL021392, AC005164, AC005921, AC004024, AC010170, AC005375, AC007014, L78833, AL080317, AP000260, AL035458, AC005288, AC005808, AL049636, X16873, AB023049, AC005562, AL008582, AC005411, AL049830, AC000090, U95740, AC005548, AL080242, AC006006, AF196969, AL035659, AF03356, AP000281, AC000081, AC006241, AC005081, AC004991, AC004598, AC004019, AC007191, AF001550, AL035450, AC005015, AC005837, AF165926, AC005409, D87675, AC004675, AC006077, AC002544, AC007993, Z93017, AP000252, Z83843, AP000036, AC004605, AP000039, AL031733, AC002310, AF196972, AC005839, AF111168, AC005527, AP000302, AC002365, AC006515, AL031390, L78751, AL031673, AC005694, AL109865, AP000557, AC007021, AC008115, AF088219, AC007227, AC002288, AC007371, AC006252, AC003682, AC005585, AC004875, Z99755, AC004887, AC004655, AC006548, AC005193, AC006013, AL035420, AC005484, AC002470, AC004386, AC006441, AC004913, AL132712, AL022318, AC004079, AC005479, AC006539, AL080243, AL031296, AC006251, AL022320, AC002565, AC004878, AC003982, AL031282, AP000501, AB003151, AL121658, AF139813, AP000115, Z85996, AP001053, AC007664, AF031078, AC000379, AC007917, AL034549, AC007510, AC004021, AC003081, AL021918, AC005913, AF134726, AC004408, AF030876, AC004381, AC005046, AC006115, AC006984, AC007292, AC002036, AC008101, AC004112, AC003663, AC002119, AC006130, AC005521, AC006101, AC006315, U85195, AC009904, AC005914, AP003626, AL021807, AF124523, AC005202, AC004797, AC002477, AP001054, AL049539, AP000356, AC016027, AC006139, AC002395, AC005529, AC005841, AC004972, AC005535, AL031589, AL034343, AC005284, AL022329, and AL246003.

HNNH72	5256	510619	1 - 716	15 - 730	AA434086
HNNH06	5257	935517	1 - 418	15 - 432	AC005280, AL109628, AC006006, and AC004686.
HNNH39	5258	937598	1 - 400	15 - 414	
HNNH46	5259	718081	1 - 435	15 - 449	
HNNH62	5260	741835	1 - 214	15 - 228	
HNNH74	5261	765601	1 - 324	15 - 338	
HNNH84	5262	781980	1 - 358	15 - 372	
HNNH93	5263	792326	1 - 548	15 - 562	TI2412, Z73967, and AL1031985.
HNNH22	5264	674617	1 - 321	15 - 335	
HNNH70	5265	757201	1 - 339	15 - 353	
HNNH74	5266	765598	1 - 212	15 - 226	AA657808, AA742830, AC006561, AC004751, AL1021367, and AC005060.
HNNH92	5267	756387	1 - 249	15 - 263	AC002288, AC002350, AC005076, AC007052, and AL049569.
HNNH10	5268	964656	1 - 324	15 - 338	
HNNH17	5269	661964	1 - 153	15 - 167	
HNNH25	5270	678144	1 - 272	15 - 286	
HNNH28	5271	575451	1 - 450	15 - 464	AI860558, AI963420, AI683827, AA342712, H74211, AA497013, AA342852, H73133, AA387516, H91062, AL120897, AA176978, AA847499, AA808173, AI243789, AI284045, AA477103, AI216799, AH71691, F09180, AA653618, AA488746, AA491882, T06828, AA224902, AI357288, AC005899, AC002492, AC009247, D87675, Z95152, AC004257, AL031282, AC009516, AC005779, AL022323, Z98036, AC003684, AC002394, AC005399, Z83840, AC007664, AC007263, AC004491, AF111168, AI066996, AC004887, AC005736, AC002404, AL031428, AC005632, AC006023, AC002119, AC006538, AC005914, AC004024, AC003109, AP000356, Z93016, AJ246003, AP000097, AC006873, AC006111, AL122020, AC007371, AL021394, AC006116, AL050348, AC003029, AC004797, AL049869, AC005209, AC007546, AL022326, AL008382, AL078477, AL049776, AC006312, AC006285, AC005907, AC002350, AC007225, AC004019, AL035683, U95742, AC006487, AL121635, U91326, AC006064, AC006120, AC005067, AP000557, AP000011, AL096791, Z69917, AC004827, AC005783, AC005562, AC007731, AC004890, AC003957, AC006014, AC005089, AC000393, AC007216, AC004668, Z95114, AC004686, AL008629, AC002546, AC003563, AC005324, AF200465, AP000505, AC004148, AC006480, AP000092, AC005962, AL034379, Z15025, AL031577, AC004675, AL009181, AL133243, AP000201, AC006468, U91318, AC007748, AL031311, AC005822, AL133448, Z86090, AL109654, AC005411, AL050307, AF129756, AL008729, AL021807, AC005306, AF005588, AL121638, AC006360, AC000134, AC007052, Z68756, AC000052, AC004999, AC004819, AL031594, U80017, AC004771, AC006050, AL078634, AC004552, AL049830, AC004938, AC004757, AC004905, AL049759, AC004448, Z70280, AF042884, AL079340, AC007192, AC005480, AL109628, AC005821, AF088219,

HNHHM35	5272	706667	1 - 320	15 - 334	AL034429, AC007686, AC003108, AC005619, AL035450, AL021578, AC006643, AC004841, AC006649, AL022312, AC009049, AC003007, AC002316, AC002430, AC005081, AC002477, Z98050, AP000241, AC008116, AC003578, AP000556, AC005722, AF124731, AC002472, AL034417, AL031291, AP000141, AP000346, AL031289, AL033695, AC004233, AL002453, AC007395, Z93244, AC006277, AC006035, AC006441, AL049709, AL031680, AC004531, AC004259, AC005500, AF045555, AP001054, AL049766, AP000359, AC002425, AC005488, AC005990, AL021453, AC007030, AL008735, AL109627, AL121769, and AL049694, Z93021, AC007446, and AC006314.
HNHHM37	5273	708715	1 - 147	15 - 161	
HNHHM52	5274	727166	1 - 290	15 - 304	
HNHHM55	5275	694373	1 - 528	15 - 542	
HNHHM70	5276	757202	1 - 245	15 - 259	
HNHHM80	5277	880776	1 - 319	15 - 333	
HNHHN03	5278	920129	1 - 452	15 - 466	
HNHHN07	5279	953393	1 - 347	15 - 361	
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AI049845.					
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HNHN111	5281	964657	1 - 337	15 - 351	
HNHN119	5281	668681	1 - 333	15 - 347	
HNHN31	5282	698035	1 - 104	15 - 118	
HNHN62	5283	745700	1 - 312	15 - 326	
HNHN93	5284	751659	1 - 345	15 - 359	
HNHH08	5285	953398	1 - 339	15 - 353	
HNHH015	5286	424836	1 - 331	15 - 345	

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HNHHO49	5287	722991	1 - 340	15 - 354	AA826320, AL569363, AA10834, AL064935, AA715814, AA657726, AA508744, AW157667, AA912287, AL792566, AC004595, AC007225, AL035659, AC004805, AC005874, AF134471, AL049714, AL035089, Z84466, AL080243, AC004534, AC005358, AC002544, Z85986, AC000403, AL031588, X99832, AC007216, AC005027, AC005632, AL031591, AL049759, U52112, AC007011, AC005529, AC004531, U95742, AC004382, AC006449, AC002456, AL009181, AC004472, AC004882, AC004983, AC006117, AC006453, AC002425, Z83822, Z83845, AC002543, AF047825, AL031005, U47924, AC009479, AC002067, AP000493, AL031767, AC005606, AC003104, AC004876, AC000085, AC005666, Z99129, AC007688, AL035460, AC002468, U91321, AL049843, AL033527, AC009248, AC003098, AP000510, AC005154, AC004832, U62317, AC002349, AC005682, AC004894, AL020997, Z98044, Z98051, AC009516, AF165926, AL117258, AL031589, AC004216, AP000240, AC005231, AC005193, Z93244, AC005071, AC004859, AC007055, AC007298, AB023048, AC006013, AC004966, AL049766, AC004196, AC005704, AC002492, AC006088, AC006441, AL034555, AC002126, AC004598, AC002064, AL049869, AL021154, AC005568, AL031283, L29074, AL049631, AL031602, AL031133, AL035458, AL133448, AL049779, AF037338, AC004821, AP000558, AC005225, and AC009731.
HNHHO66	5288	727167	1 - 325	15 - 339	
HNHHO79	5289	774038	1 - 311	15 - 325	
HNHHO2	5290	920120	1 - 329	15 - 343	
HNHHO4	5291	935501	1 - 300	15 - 314	
HNHHO16	5292	661962	1 - 343	15 - 357	AC005596.

HNHHR04	5293	935502	1 - 341	15 - 355	
HNHHR46	5294	720358	1 - 334	15 - 348	
HNHHR61	5295	741830	1 - 311	15 - 325	AL022396.
HNHHR93	5296	775194	1 - 399	15 - 413	
HNHHS46	5297	956186	1 - 671	15 - 685	AA553367, AW452948, AA828734, and AI912090.
HNHHS74	5298	765584	1 - 408	15 - 422	AA585573, AC005036, AL021026, AC003951, AL034551, Z83820, AC002463, Z68325, AC004062, AC004949, and AP000082.
HNHHS76	5299	788913	1 - 300	15 - 314	AI541356, R29657, AA585098, T18597, AA585325, R45895, Z28222, AA585101, D53161, R28735, R29445, D57491, C15406, AI557740, Z28355, D59751, AA585155, AI557864, R28892, D61185, Z32887, C15069, AI5526140, AI541365, AI525500, AA170832, AA585439, R28965, D59436, AA585378, AA585329, R29218, D60844, AI526184, AI526078, AI557731, AA585476, D60765, D54897, R28967, R28895, AI557727, AI541205, AI541535, AI546971, C16315, AI525556, AI525316, AI541383, AA283326, AI541517, AI547250, AI546875, AI557763, D61254, AI557734, D53472, AI546999, AI526016, AI557787, C16293, AI541013, AI547039, AI557807, D55233, AI525306, D53447, C16300, AI541374, C16294, C15120, AI557084, D2835, AA585356, AI524945, AI541346, C16292, AI557718, AI546945, AI525431, AI557155, AI547196, C15762, AI557408, AI526191, AI557758, C16305, AI541523, Z20131, R29179, AI552539, AI541034, AI526194, C15737, AI557809, AI546921, AI541307, AI546996, AI540967, AI546891, AI547006, AI540903, AI557602, AI540974, D60730, C16296, AI526109, Z33559, R29177, AI525320, AI557279, AI547202, AI526176, D57186, AI541321, AA585345, AI526094, R29262, AI557808, AI526112, R29172, AI526138, D51433, C14208, AI541527, AI535639, AI535660, AI536138, D54850, AA585430, AI546829, AI557533, AI526113, AI541510, C16290, AI525856, AI557039, AI526195, D59458, AI556967, T19407, AI547137, AI526073, AI526180, AI557264, AI546831, T41289, Z36724, AI541422, AI525656, AI526117, AA174170, AI525332, AI526187, AI525286, AA514191, AA585117, AI541515, AI547189, AI239433, AI540920, T41329, AI541492, AI524904, AI524890, AI557799, AI524891, AI546855, AI541027, AI541345, AI557041, AI557238, C14322, AI557852, AI546828, AI541506, AI541415, AI557082, AA585434, AI526205, AI557786, C14391, AI541402, AI525114, AA585440, AI546901, AI557317, AI557285, C14773, AI525168, AI526146, AC005913, AR038762, AR038855, AR062871, AI525909, Y09813, X82786, Z22836, AR054723, AI021395, X31969, AR0244005, Y16359, AF082186, D78345, D50010, D13509, AI244004, A20702, AR062872, AR062873, A20700, AA3189, AA43188, AR017907, AI244003, AC002563, X55486, X76012, AC007308, AC002470, AL031293, AC002430, and AC007384.
HNHHS79	5300	775192	1 - 359	15 - 373	
HNHHS35	5301	707342	1 - 392	15 - 406	AC000093.
HNHHS55	5302	465438	1 - 418	15 - 432	AI274692, T40452, F33126, AA076426, N25415, AA321595, AA975915, AI273675, AI268564,
HNHHS70	5303	783033	1 - 180	15 - 194	

					AW276933, AL138918, AA741020, AL371804, AL12021, AA640204, AL343078, AV341882, T76091, H13565, AF109907, AL034423, AC004911, AF038458, AC005668, AL033527, AC005740, AC004552, AC005822, AC005348, AC007546, AL009733, AF088219, AC005859, AC003959, AL003508, AL009181, AC006343, AC005082, AC005919, AC004470, AC004531, AC007388, Z98047, AC006059, AL121603, AL023799, AC005291, AP000696, AL135744, AC006996, AC007312, AC003098, Z94721, AF003626, AC004838, AP000688, AC002070, AC004967, Z98941, AL008372, AL011117, AC004841, AL035425, AL139054, AC005539, AL035695, AC005971, AP000031, AC004916, AE000658, AL109865, AC004217, Z98946, AC011311, AL035400, AC003071, AC004685, AL049833, AP000344, Z94056, AC004849, AC1109963, AL021408, AL133245, AC007376, AC002381, AC007938, AC012384, AC005049, Z84469, AL080243, AF117829, AC006305, AC004870, AC005800, AC002312, AL251973, AC005412, AL031650, Z98304, AC018769, Z96074, AC005994, AL035555, AL031657, AC006441, AL023807, AL023281, Z86062, AC005670, AC005138, AC002416, Z99716, AC007878, AL049696, AC004003, AC003950, AP000516, Z98752, AC004813, AL117694, AC004583, AC004801, AL049776, AC002365, AC004522, AL049843, and Z92341.
HNHHU46	5304	465395	1 - 346	15 - 360	AI950671, AA586656, F03525, AA829565, AL161739, AC005837, AC006285, AL121595, AL050317, AC002527, AC006088, AC005318, AC002996, AC004942, AC005841, AF165926, AC005209, AC016025, AC005368, AC007151, AC005971, Z83840, AC005914, AC002477, AF205588, AL133382, AL049766, AP000347, AL121652, AF053356, AC006011, Z82244, AL008721, AL022345, AL049776, AL133163, AL133245, AL050318, Z99716, AL049712, AC003109, Z97053, AC006468, AC008372, AC004821, AC004408, AC005924, AL034343, AC005899, AC004854, AC005765, AC002369, AL021808, AP000692, AL109798, AL049829, AC004601, AL049759, AC006449, AC005933, AL023807, AC004966, AC005902, AC004019, AC002352, AC016026, Z83826, AC005482, AC004526, AL034379, AL031283, AC005529, and Z95114.
HNHHW01	5305	859935	1 - 407	15 - 421	Z98885.
HNHHW32	5306	699255	1 - 272	15 - 286	
HNHHW58	5307	739288	1 - 228	15 - 242	AA824650, AA663908, AL302974, W89152, AW338697, AL035400, AC005912, M63543, M63544, AC007227, AC004841, AC004263, AC007327, AL023807, AC007993, AC006430, AC005764, AF141309, and AC004408.
HNHHW61	5308	742071	1 - 145	15 - 159	
HNHHW73	5309	765588	1 - 322	15 - 336	AL119119, C06015, T11417, D59503, D81111, D80064, C14227, D58246, C14389, D80195, AW360811, D59502, AW177440, D51799, D81026, AW178893, C15076, D81026, D80258, AW375405, D59467, C14407, D59275, D58283, D58101, D80227, D80022, D81030, D80166, D59859, C14331, D80193, D59619, D80210, D80591, D80240, D80045, D51423, D59787, D80038, AA305578, D80253, D80043, D80212, D80196, AW366296, D80188, AW360844,
HNHIA02	5310	920094	1 - 482	15 - 496	

				AW360817, D80219, D57483, D59610, D59027, AA514184, D80378, AA514188, D59889, D80024, D80302, AS57774, D80439, AW177501, D80269, AW177511, C14298, D80247, D50979, D80522, AA305409, D80251, D80168, D80241, D80014, A1557751, D80268, D80366, D51022, C14429, D80248, D50995, C14014, D59695, D51060, F13647, AW360841, D51103, D80133, AA514186, D80157, AW179328, AW352117, D52291, D59653, AW360834, A1535686, D52600, AW35406, D51759, D59627, AW378534, C03092, T03116, AA809122, AW179332, AW377672, AW378539, D80949, AW179023, AW178905, D51079, H67866, T033291, A1525923, AW377671, H67854, AW378533, C05695, C75259, AW378532, AW369651, AW332171, AW178907, D59317, AW352170, A1525920, AW177505, D59373, AW178906, D51250, AW377676, AW179024, AW178775, D59551, A1525917, T48593, AW177731, AW178909, AW177456, C14973, AW378528, AW178762, AW179019, C14344, D51221, AW179329, AW179018, AW178980, D59474, Z11582, AW178754, D60010, D60214, AW179020, AW352158, A1525227, AW178908, C14046, A1910186, AW177733, D45273, C14957, A1525235, AW179012, A1525923, AW352120, AW378525, A1525242, AW179004, A1525215, AW177734, AW367950, D51213, AW178986, AW178914, AW178774, AW176467, T02868, D59976, A1525912, AA285331, C14077, A1525222, A1778911, A1525928, AW378542, C05763, Z33452, T02974, A1525237, AW179009, H67858, A1525222, A1778911, A1525928, AW378543, A1535959, AW378540, AW177722, AW352163, C13958, AW360855, A1535665, T03048, AW177728, C04682, D51053, D31458, Z30160, N66429, D80314, D80228, AC000378, A82595, AR060385, A84916, AB028859, A1132110, A62300, A62298, AB002440, AR018138, AR008278, AR058696, I50126, I50132, I50128, I50133, AR016808, I14842, AR054175, Y17188, D26022, AR016514, X67155, A67220, Y17187, AR060138, Y12724, D89785, A43456, A94955, A26615, AR052274, A43192, A63261, A43190, AR038669, A78862, D34614, A70867, AR066488, A25909, Y09669, AR066487, AR062872, A30438, AR008277, AR008281, AR008443, I82448, AR016691, AR016690, A46128, D88547, I79511, A64136, A68321, X92626, D50010, AR008408, X68127, X64588, AR025207, AR060133, AFI22363, and AR032065.
HNHIA16	5311	661931	1 - 411	15 - 425
HNHIA20	5312	669685	1 - 408	15 - 422
HNHIA34	5313	706675	1 - 192	15 - 206
HNHIA38	5314	736046	1 - 378	15 - 392
HNHIA64	5315	745861	1 - 437	15 - 451

FNHIA73	5316	559344	1 - 258	15 - 272	AC004317, AC005365, AL079295, AL049747, AF109907, AL049869, Z81369, AC003950, AL008725, AL080317, AC007993, AC001083, AC005531, AL109628, ZJ246003, AC005180, AC005618, AC002312, AF196969, AF111168, AC005535, AC005220, US8668, AL031595, AC002400, AL003548, AC004596, Z83826, AL031848, AC004222, AC004878, AL008822, AC006487, AL034420, AC005844, AC007688, Z83847, AC006544, AC005277, AC007225, AC005911, AC005229, AC004148, AC005500, AC005486, AC005300, AC002470, AC007227, AP000692, AC005003, Y14768, AF207550, AL049569, AC005821, AC005057, AP000103, AC003800, AL035405, AL022315, AL079304, AP000087, AP000505, AC005377, AL117694, AC002094, AC003983, Z84056, AC005288, Z86061, AC004638, AL109013, AC004491, AF031078, AC005274, AF134726, AC005081, AC005082, AL031427, AC007283, AC005261, AL080243, AC005089, AC005529, AF196972, AC005399, AP000533, U91326, AC003109, AF030876, AL121658, Z98048, AC007226, AC007308, AC007421, AL121653, AC002430, AL0035249, AC002310, AC006101, AC005015, AC004797, AF129756, AE000658, AC011456, AC005921, AL109798, AC005940, AC005484, AC005231, AC005412, AC005871, AC006064, AL031587, AC006077, AC007384, AC009509, AC004477, AL109952, AC006948, AP000117, AL022334, AC005252, AL133246, AC006468, AC005578, AC006096, AL049872, AC004883, Z98044, Z99716, AC007546, AL022322, AC004033, AC004475, Z81359, AL049843, U07563, AC004000, Z99116, AL031432, AC004812, AC006571, AC005157, U08459, AC004832, AC007731, AP000350, Z98304, AC005031, AL031133, AL022326, U91321, U08459, AC004832, AL031659, AC002477, AC006121, AL121652, AL035071, AC004494, AC005387, AL049766, AC004858, AF196971, AC00378, AP000689, AC004693, AL078584, AC008072, AC007551, AC011362, AC000353, Z99128, AP000045, AC005881, AC007676, U07562, Z70288, AL0050306, AC007842, Z83844, AC004813, AL023575, AL080242, AC007774, AC005702, AC006953, AL133396, AC005971, AC002351, AL078638, AC005600, AC005668, AC005335, AC0060254, AC002316, AC002517, AC002369, AC002395, AL050341, D87675, AC006285, AC003663, AC006315, AC004125, AL139054, AC004922, AC004150, and AC004531.
FNHIA94	5317	970720	1 - 295	15 - 309	
FNHIA95	5318	908419	1 - 434	15 - 448	R93353, A447817, AA574189, AW139964, W81697, AL887846, AA831618, AA677404, AL124782, AA447667, AA765804, AC008173, AF124523, AF146367, AF118808, Z83841, AC002464, AC005820, AC006048, AC004074, AP000509, D84394, AL096775, AL109954, AC007359, AC008175, AL096801, and AC006313.
FNHIB22	5319	967038	1 - 348	15 - 362	
FNHIB56	5320	734763	1 - 318	15 - 332	
FNHIB77	5321	781214	1 - 396	15 - 410	
FNHIB94	5322	793210	1 - 338	15 - 352	AA663964, and AL035106.
FNHIC39	5323	705375	1 - 410	15 - 424	AL121782.

HNHHC46	5324	842003	1 - 441	15 - 455	AA169263, A4610219, N23896, A1053911, AA526630, AW074382, AA747469, AA719510, AA532882, A4537772, A1460009, A4961035, AA804925, AA378690, AA380354, AA829073, T06851, A5048665, A491886, A1678368, A4526856, AA557883, A48021583, AA807583, AA697154, AA413624, A4533944, A1802801, A1720058, AA706291, A4W10354, AA137013, AA629796, AA433907, AE183057, AA338544, A1791150, AA954924, A1254779, AA847515, AA596520, AA807845, AA127426, AA551105, AA630672, A454713232, A47148507, AA454088, R58559, A1249683, A4659535, A1047489, A6069572, A1037632, AR034194, A4331760, AA531580, C75192, A267818, A4722297, A4654738, A4W168570, A1811563, A4307330, A1079709, A1873549, A4948778, A4640277, A1120986, A4136577, A4A011026, A46A04840, A4864261, A4668387, A47082559, A1086830, A4664942, A1133329, A4C03568, A4C05722, A4C007161, A4C07308, A4C04706, A1133382, Z84489, A4C002470, A1096762, Z84487, A4C06222, A4C10209, A4P000252, A4C05258, A4C06023, A4P000134, A4P000212, A4C004552, A4P000222, A4C04801, A1079304, A4C02388, A4E207955, A4C04967, A1022312, A4C006353, A4C006013, A4C05796, AR036572, U91328, A4C004694, A4C005593, A1008707, A1021397, Z84469, A4C006144, A4C004263, A4C000025, A4F196969, A4C005519, A4C005527, Z97362, A4C008012, A1053048, A1080243, A4C06079, A4C005340, A4C005953, A4C007136, A4C00584, A4C0077845, A4C069974, A4F196970, A1031685, A4C005335, A4C007868, A4C005529, A4C005494, A4C05280, A4C004815, A4C06275, A4C009247, A4C007066, A1133355, A1022269, A4C007463, A4C003009, A4P00159, A4P00017, A4C006353, A1022320, A4C035669, Z97183, A1109963, A4F11167, A4C02350, A4P000359, A4C002369, A4C004517, Z89901, A4C06211, A1135960, A1J1016, A1031846, A4C04526, U93335, A1080241, A1133445, A4C007226, A4C005940, A4C004864, A4C005531, A4C005932, A1031721, A4B014077, Z93017, A4C005495, A1008723, A4C004212, A4B023050, A4P000512, A4C005226, A4C004841, A4P000164, A4F12181, A1022165, U16812, A4C007193, A4P000113, A4C004558, A4C005666, A4C004960, A4C04832, A4C002997, A1031229, A4C004938, A1139054, A4C004656, A4C002070, A4C009516, A4C002399, A4C005736, A4C004019, A4P000776, A1031295, A4C004934, A4C006130, A4C004097, Z83838, A4C007565, Z95152, A4P00064, A4C005756, A1022315, A4C004410, A4C07435, Z83999, A4C002105, A4C005808, A4C006449, A4C004000, A4E207550, U73169, A4P00245, A4C005837, A1035422, A1133448, A4P000300, A1034548, A4C016026, A1034549, A4L008726, A1133371, A4C004686, A4C000094, A1096701, A4F038458, A4C004486, A1022721, A4C002310, A41031311, A4C010197, A4F186194, Z937873, A1031296, A4C006241, A10778476, A4C002492, A4F039907, A4C000553, A10220997, A4C005224, U11900, A1096774, A4C005255, A4C005360, A4F227510, U91322, A4C000364, A4P000514, A4P000510, A4P000556, A4P000557, A4C003007, A4C007041
HNHHC46	5324	842003	1 - 441	15 - 455	
HNHHC96	5325	779876	1 - 371	15 - 385	
HNHHC29	5326	690646	1 - 391	15 - 405	
HNHHC53	5327	727151	1 - 395	15 - 409	
HNHHC45	5328	731761	1 - 438	15 - 452	

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HNHIH79	5329	774044	1 - 445	15 - 459
HNHIH75	5330	765585	1 - 403	15 - 417
HNHIH72	5331	921945	1 - 652	15 - 666
HNHIH70	5332	916503	1 - 396	15 - 410
HNHIH69	5333	465504	1 - 315	15 - 329
HNHIH67	5334	668657	1 - 417	15 - 431
HNHIH65	5335	708713	1 - 400	15 - 414
HNHIH68	5336	753023	1 - 398	15 - 412
HNHIH71	5337	465407	1 - 414	15 - 428
HNHIH73	5338	675262	1 - 311	15 - 325
HNHIH77	5339	681727	1 - 424	15 - 438
HNHIH79	5340	689891	1 - 182	15 - 196
				D45273, D80269, D59467, D80227, AA809122, D50995, D51079, D80043, D59275, T11417, D50979, Z21582, D80378, Z33452, C14077, F13647, T03048, T02868, D51423, A1525242, Z30160, H67854, D80188, D80247, D57483, C14331, T02974, D51799, AA514188, A1557774, C14344, D59610, C14407, D59927, AA305720, D80241, D58101, A1525237, A1525917, A1525920, A1525903, A1525738, N66429, A1525907, A1525227, A1525215, A1525969, A1535961, AR008277, AR008281, AB002449, AR010808, AR008278, A84916, T79511, AR054175, AR018138, and AR058696.
HNHIH46	5341	720333	1 - 402	15 - 416
				AA480792, AL687146, AA594072, AA351003, AA984114, AC002530, AC004637, AL009031, AC002336, AC002352, AC004408, Z76080, Z96104, AL033504, AP000503, AF134726, AC000134, AJ239322, AC005939, AL109847, AC002978, AL118498, AC004019, AL031733, AC008115, AB016897, AF095725, AL109623, AC002546, AC004125, AL139054, AC005859, AC008040, AC000081, AC005512, AP003236, AP00169, AP000054, AP00122, AC006088, Z97832, AL049830, AC000118, AL009178, AC004167, AL009174, AL034423, Z93017, AC007486, AC005881, AL109628, AP000555, AC004684, U79746, AC002477, AC005229, AC002044, AC000353, AC005562, AL020997, AC002072, AL049694, AC005484, AC000343, AC012089, and AL136297.
HNHIH58	5342	739290	1 - 343	15 - 357
				AL031728.



HNH166	5343	684531	1 - 162	15 - 176
HNH171	5344	760371	1 - 311	15 - 325
HNH173	5345	765591	1 - 419	15 - 433
<p>             A W0609227, AW406755, AL041375, A791659, AH79148, AI365988, AI358229, AI413303, AA502532, AI753365, AI354228, AI521525, AA226584, AI355246, AA573020, AW151541, AW419262, AA482711, AA861959, AI609972, AI754976, AW193265, AA424249, R67701, AA128592, AI12401, AI356440, T29180, AI289505, AI926102, AI084012, F00982, AI431434, AA148489, H79586, AI362552, AA904211, AI471481, AI176605, AI798449, AA015948, AW316969, AA984258, AI244254, AI755214, AA610491, AW084173, AI888468, AI797098, AW741955, AI634187, A682912, AA846923, AI754105, AA584482, F36273, AA904275, AI569363, AW261996, A601680, AA642809, AI044858, AC006064, AC004477, AC002663, AC006111, AI035684, AC005488, US3195, AC007376, AE000658, U47924, AP000462, AC005695, AC004834, AB017654, AC005081, AC005257, AI021546, AC002569, AP000557, AL049869, AC004019, AL049872, X35928, AC007993, AC008545, AL008726, AL009181, AP000348, AL022237, AC005037, AF111168, AC002425, AC006449, AL023575, AC005480, AC005041, AC004156, AC005255, AC005231, AC004752, AC007387, AF207550, AL135744, AC006125, AF053356, AC005034, U78027, AC005776, AC007421, AC006952, AC005215, AC004821, AC006512, AP000355, AC002544, AC002395, AD000092, AL035455, AC002310, U95742, AL034379, AC005048, AC003682, AL079295, AL035072, AC002316, AC004812, AC002126, AC005071, AL035089, AC005581, AC004491, AC004496, AC005409, AC004263, AC005971, AL034420, AC002477, AC005330, AC004983, AC005412, AC002492, AL031390, AC004216, AL034417, AL031767, AL022326, AL031311, AL031685, AC005305, AC006014, I51997, AC009516, AB000882, Z98752, AC005057, AP000211, AP000133, AC007785, AC0016025, AL133245, AL022323, AC006011, AC004106, AC000075, AC007546, AL021707, AC004887, AL078581, AC000084, AL136295, AC005399, AL109758, AC002314, AL132641, AC005726, AC006112, AL096702, AC002491, AF011889, AL080243, AC007242, AC007298, AP000210, AP000132, AP000115, AL022476, AC007226, AC007216, AC008126, AC007845, Z86090, AL022165, AF045555, Z81369, AC005944, AL031662, Z98048, AC004098, AC005722, AC003029, AC007182, AC005740, AL121934, AC004150, Z92540, U29553, AL132642, AL133353, AC005069, AC006511, AC006315, AC004890, Z84480, AL096701, AC005527, AF109907, AC003982, Z99291, AC004167, AL031680, L44140, AC006139, AC007263, AP000511, AC004253, AC005193, AP000556, AP000552, Z84466, AC006441, AL034348, AL109827, AL050318, AL049831, AL031255, AC006630, AC007240, AC006241, AC004072, AC002347, AC005914, AC005378, AL022327, AC004494, AC005668, AF001530, AL021579, AF031078, AP000248, AL109963, AP000555, AC005519, AP000356, AF155238, AL034555, AP000512, AC006077, AP000045, AP000113, AC005746, Z82180, AL020995, AC003006, AL031005, AC006365, AF030876, AC006071, AC006948, AC002394, AP000501, AC007541, Z99716, AP000354, AL031228, AL031120, AC005516, AL035587, AC004543, AC005225,           </p>				

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HNHIH82	5346	779874	1 - 414	15 - 428	AL023653, and AL022162.
HNHIH96	5347	734114	1 - 596	15 - 610	AC005137.
HNHIH84	5348	775407	1 - 435	15 - 449	
HNHIH14	5349	967087	1 - 405	15 - 419	
HNHIH95	5350	795877	1 - 333	15 - 347	
HNHIH13	5351	657249	1 - 390	15 - 404	
HNHIH25	5352	707339	1 - 391	15 - 405	AA121919, N69190, AL079423, AL119438, AL539009, Z99426, Z98051, AL121769, AL096853, AC005839, AC003663, AC002994, AC006077, AL121603, AC005529, AL109628, AC005755, AL021939, AC005726, AC005678, AL031594, AC004263, AC010582, AC005089, Z98745, AC004019, AP000512, AC005914, U85195, AB000658, Z83826, AL035387, AL009181, AC006571, AC007686, AL022345, AC004382, AC006372, AC005004, AL031589, AC002115, AC004955, AL008242, AC008015, AC004383, AC006509, AC004087, AC006505, U96629, AC003682, AF038458, AL049636, AC005803, and AC004967.
HNHIK15	5353	859926	1 - 409	15 - 423	
HNHIK160	5354	739885	1 - 335	15 - 349	
HNHIK124	5355	859923	1 - 377	15 - 391	AA847395, AA523331, R98239, AL473300, N49802, AA557790, AL609972, AA655005, AA486877, H68186, N95156, AL029171, AFV72599, AW327624, AL037714, AW32782, AC003967, AP001050, AL022098, AF124730, U91318, AL109738, AC004771, AC005256, U95090, AC005330, AC005622, AL008726, AL049610, AL035588, AC004743, AF064861, AC004821, AP000688, AC007386, U82828, AC005722, AC005392, AC004456, AL024461, AC005907, AC006130, AL031771, Z93930, AC005006, Z83851, AC004881, AL024498, AL024509, AC004765, Z96074, AP001053, AL049869, AL109759, AC004382, AL133246, AC005799, AL034429, AC005048, AC004049, AB003151, Z69920, AL050307, AL031664, AL022165, AC005017, and AC005083.
HNHIK172	5356	761427	1 - 301	15 - 315	
HNHIK188	5357	786555	1 - 461	15 - 475	AA745582, AA533457, AL097850, AA515224, AA594145, AL570261, AL439360, AL623898, AA310868, AL659826, AVF341890, AA704643, AA663306, AA587604, AA805573, AW338086, AA347930, T40077, AA743980, AL590772, AW406755, M86143, AL635988, AW250970, AA358409, AA347927, AA780929, AF147277, AL049776, AP000294, AL118497, AC002544, AC005291, AL035420, AL031276, AP000043, AF196779, AC002350, AC004854, U95742, AL008582, AC006285, AP000111, AC003965, AC002553, AC016025, AC005911, AL049557, AC004955, AF134726, AC0010197, AC002470, AL121877, AC005231, AL035681, U96629, U75285, AC006241, AC008273, AC010200, AC004801, AF053356, AC005969, L44140, U91326.

HNHN73	5358	762011	1 - 548		AC005594, AC004076, AC005510, AL132712, AC004745, Z68872, AC004972, AL108708, AC007793, AF088219, AP000082, AP005557, Z93017, AC006231, AF045555, AC009731, AB020867, AC008079, AP0014079, AC003082, AC005197, AC004890, AL096701, AC007032, AL049697, AC004263, AC007731, AC005500, AC009784, AC002363, Z72650, AC004690, AL035699, AC006139, AC000003, AC006153, AC000359, AC004650, Z77807, AL035455, Z73417, AC003553, AL023879, AC009509, AB023051, AC005409, Z86061, AC004234, AC000094, AC005944, AP000223, AC000085, AC009178, AF200465, Z97196, AL031584, AC003781, AL022320, AC007308, AC006946, Z83840, AL121653, AC002316, Z97084, AP000952, U13079, AL022721, AL121915, AC004019, AP000552, AP000303, Z8382, AC005181, AC008124, and AP000512.
HNHN73	5358	762011	1 - 548		AC005216.
HNHN73	5359	793658	1 - 336	15 - 562	AC005216.
HNHN73	5360	721149	1 - 726	15 - 350	AA421400, and AL208373.
HNHN73	5361	761432	1 - 722	15 - 740	
HNHN73	5362	750487	1 - 318	15 - 736	
HNHN73	5363	766926	1 - 311	15 - 332	AA491361, AA297081, AA649079, AL362442, T31183, AL570805, AA468289, AL732682, AL872493, AL289050, AL872476, AL284092, H25626, AA337978, AL610900, R86141, H01852, AL078143, AA516045, AL035417, AC005043, AC001456, AF049895, AP001549, U52112, AC005881, Z85996, AC005244, AP000962, AL022336, AC006241, AC005480, AC007688, AC005625, Z82203, AP000689, AC022517, AB003151, Z93930, AC004383, AC007774, AL035071, M26434, AC006023, AL109653, and AL109657.
HNHN73	5364	934643	1 - 270	15 - 325	
HNHN73	5365	766924	1 - 128	15 - 284	
HNHN73	5366	751205	1 - 363	15 - 142	AC00364.
HNHN73	5367	786020	1 - 348	15 - 377	
HNHN73	5368	786020	1 - 348	15 - 362	H69968, AA601230, AL120191, AA878492, AW104800, AA629963, AL288033, AL800343, H93132, AA501867, AA362790, AA653916, AA525769, AL246061, AA078509, AA079884, AA526662, AL23626, R72242, AW249641, AL12333, R84528, AB09786, AL054090, AA664248, AA678733, CL1966, AD51241, AL134332, AL284543, AW238212, AL254770, AL251944, AL251034, AL251203, AL251284, AL250552, AW130446, R87912, AA088738, H41308, T08386, AL043315, AW419389, AA487829, AL138017, N25043, AW089950, AL249853, AA286727, AC005348, AC005180, U82828, Z94161, Z81369, AL079295, AC006537, AC007676, AL050333, AL033522, AC005049, AL024498, AF196969, AC005355, AL035067, AL109865, AL009171, AL022328, Z85986, AC006101, AC002117, AC004477, AC005921, AL023876, AL109627, AC007787, AC000070, AC005553, AC004520, AC003071, AC008044, AC005486, AC005697, Z98051, AC005331, AC002364, AC006141, AF222686, Z85999, LA3399, AC020663, AL050313, M89951, AF031078, AC000067, AF030876, AC000067, AF030876, AC005943, AC006088, Z98884, AC004882, AP000260, AC004007, AL030318, AC004765, AL034549, AC002126,

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HNHL069	5383	754466	1 - 454	15 - 468
HNHL08	5384	859857	1 - 318	15 - 332

HNHLD13	5385	805983	1 - 400	15 - 414	
HNHLD37	5386	859859	1 - 394	15 - 408	
HNHLD81	5387	779345	1 - 288	15 - 302	Z49769, and AC005516.
HNHLE72	5388	966149	1 - 232	15 - 246	
HNHLE75	5389	859856	1 - 244	15 - 258	
HNHLEF33	5390	908449	1 - 243	15 - 257	
HNHLE58	5391	859858	1 - 343	15 - 357	
HNHLEP56	5392	883321	1 - 211	15 - 225	AW403735, AA459771, AW138677, AW293884, and W44360.
HNHLEP69	5393	754440	1 - 168	15 - 182	AC004844.
HNHLEP77	5394	967239	1 - 506	15 - 520	Z94161.
HNHLEQ36	5395	760460	1 - 519	15 - 533	
HNHLEQ61	5396	795942	1 - 501	15 - 515	
HNHLEQ80	5397	775621	1 - 239	15 - 253	
HNHLEK73	5398	761855	1 - 404	15 - 418	
HNHLEK91	5399	789786	1 - 262	15 - 276	
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HNHLS04	5400	927077	1 - 297	15 - 311	
HNHLS53	5401	827329	1 - 273	15 - 287	
HNHLT49	5402	784983	1 - 116	15 - 130	AL031258.
HNHLSV84	5403	782319	1 - 265	15 - 279	
HNHLSW93	5404	791782	1 - 489	15 - 503	AL096701.
HNHLSX82	5405	779298	1 - 327	15 - 341	
HNHLMC78	5406	772969	1 - 394	15 - 408	
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HNHNMZ59	5426	761661	1 - 393	15 - 407	AL021026, and A91686.
HNHNMZ86	5427	784099	1 - 79	15 - 93	
HNHNMZ89	5428	786457	1 - 318	15 - 332	
HNHNA02	5429	918720	1 - 215	15 - 229	AL096774.
HNHNA69	5430	754452	1 - 148	15 - 162	AL035409.
HNHNB77	5431	771523	1 - 423	15 - 437	
HNHNC82	5432	779321	1 - 298	15 - 312	
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HNHND80	5433	775612	1 - 418	15 - 432	AFI23263, A85477, I19525, A86792, AK032065, X93549, and AR008382.
HNHNE11	5434	966146	1 - 81	15 - 95	AC007312.
HNHNE59	5435	771529	1 - 360	15 - 374	
HNHNE83	5436	780628	1 - 333	15 - 347	
HNHNG73	5437	761849	1 - 444	15 - 458	AI392922.
HNHNI10	5438	963571	1 - 212	15 - 438	AP000161, and AP000020.
HNHNI14	5439	923079	1 - 252	15 - 266	
HNHNI08	5440	859837	1 - 229	15 - 243	AC005071.
HNHNI71	5441	775635	1 - 180	15 - 194	
HNHNI70	5442	756633	1 - 396	15 - 410	
HNHNI56	5443	859834	1 - 580	15 - 594	AA761012.
HNHNI084	5444	782328	1 - 422	15 - 436	AL133243.
HNHNI980	5445	775631	1 - 540	15 - 554	C14389, D59927, D51022, D80022, D80391, D59787, D80196, D80166, D59619, D80210, D80240, D80043, D81030, D59502, D80195, D50995, D80212, D58283, D80219, D59859, C15076, C14331, D80164, D80132, D59467, D51433, D51799, D59275, D80253, D80227, D80193, D80188, A4305578, D57483, D80269, A4305409, D59610, D80038, D80366, AA514188, D50979, D51060, D59889, D80024, D81026, D80378, D80045, AW177440, D80241, AA514186, C14429, AW178893, D80168, D80248, D80133, T03269, AW179338, C14014, AW360811, D80522, D80251, AW378532, AW177501, AW177511, AW178762, D80134, D51250, AW375405, D58253, AW178775, AW377671, D80268, AW369631, C13647, AW352158, AW366296, D80247, AW360817, AW375406, AW378534, AW179332, AW377672, AW179023, AW178906, AW352170, AW177731, AW178907, D80302, D59695, T11417, AW352171, D81111, AW179020, AW177456, AW179329, AW05856, AW178980, C14407, AW177733, AW378528, AW178908, AW179018, Z21582, AW352174, D80157, AW178914, AW378525, D51103, AW367967, AW378540, AW360834, AW177728, D51759, D58246, AW178774, AW178911, AW177723, AW378543, AW352163, D59503, C14077, C06015, AW178781, AA285331, T48593, D38101, D51097, D59627, D80258, C1557751, D45260, C03092, AW378533, D51213, D80014, AW367950, A1525923, H67866, H67854, C14973, AA809122, AW178986, T03116, D45273, D51221, AA514184, A1525227, C14046, A1525235, T03048, A1535961, A1525920, A1557774, D59551, T02974, A1525925, A1525215, C16955, C05763, Z33452, AW360855, H67858, A1525237, AR018138, A84916, A62300, A62298, A1132110, AF058696, AR008278, AB028859, X67155, Y17188, D26022, A25909, A67220, D89785, A78862, D34614, Y12724, D88547, X82626, A82595, AR025207, AB002449, A94995, AK060385, AK008443, I50126,

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			U48453, AR008408, Z77249, and AC008171.
HNNH123	5447	968911	1 - 423
HNNH127	5448	920254	1 - 410
HNNH152	5449	859831	1 - 216
HNNH164	5450	859832	1 - 208
HNNH204	5451	927027	1 - 154
HNNH288	5452	959011	1 - 544
			15 - 437
			15 - 424
			15 - 230
			15 - 222
			15 - 168
			15 - 558
			AA507824, AL284640, AW088846, AL12309, AL963720, AA877817, AL119691, AW303196, AA846876, AL138265, AW274349, AW327868, AW301350, AA581903, AL046409, AA521399, AA521323, AL144101, AW274346, AL038705, AL120959, AL038072, AW304584, AW265593, AL133164, AL345518, AW193265, AW679514, AL431303, AA490183, AL355206, AL133102, AA720702, AA806796, AL611203, AW268973, AA629992, AW407578, AL1863905, AW265385, AL457397, AA531372, AA533036, AL281881, AA469451, AA665330, AL613280, AA491284, AL043719, AA523838, AL046457, AW276817, H71429, AA470969, AW073470, AA491284, R24887, AL110770, AL053790, AA515549, AA372478, AL305547, AW270382, AW238278, AW340844, AL623720, AA569471, AL045053, AA551503, AL121235, AA503473, AL632991, AL041690, AA587587, AW020340, AA856848, AL610159, AA491814, AL042853, AA525824, AA501809, AA514854, AL654525, AA523843, AW265170, AW276827, AL149478, AA682912, AL801600, AL792518, AL696962, AL633025, AA5384145, AA548058, AL821271, AA780515, AA101689, AW072923, AL249997, AL903462, AL567832, AA569661, AA515829, AL061143, AL251436, AL583283, AL719292, AL623002, AL499588, AW103738, AL048925, AA525856, AA532843, AL244119, AL860020, AL350211, AL343695, AA812139, AA775207, AW273218, AL061394, AL048626, AL038474, AL721056, AW440545, AW269488, F36273, AL792505, AL754638, AL282511, AW338086, AL679132, AW276435, AW438643, AW302903, AL042420, AL536665, R97780, AL345157, AA346458, AW168453, AL669453, AW028392, AW271904, AL357288, AL580652, AA515909, AW04653, M77974, AA747276, AA665199, AA649642, AL126035, AA533333, AL368745, AL718446, AA533725, H63262, AA513141, AL754955, F36306, AA503258, AL568678, AL808877, AW029038, AL862173, AL053606, AA577906, AL589230, AW079462, AL604362, AA513181, AW021583, AL956124, AA583955, AC007165, AL021878, AL121754, AC003695, U57007, AL031577, D83989, Z81369, AL1079295, AC005166, AL035681, ALF09907, AC004447, L51997, AC005844, U57006, AC005589, AC005237, AL049776, AC004883, X55923, U62317, X55926, U18391, ALF015148, AC008372, AC005666, AL121718, AC005971, AC008039, AC005071, L48472, AC006432, U57005, AC008417, U18392, AL031279, M37551, U67825, AC007055, AC005399, AC006079, AC003101, AC006064, AC005253, Z97352, AL022476, AC007387, AC005011, AC003038, AL050333, AC005940, AC005231, U15177, AC004957, AC005919, AC009300, AC004611, U18394, X53550, AL008582, ALF16815, AL003147, Z79997, AC004972, AL021707, X55922, AL008583, AL031280, AC005694, AL132641, AC002465, AC003690, AC004887, ALF091512, AL078611, ALF015156,

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HNHOA03	5453	923032	1 - 443	15 - 457	
HNHOC03	5454	922892	1 - 318	15 - 332	AP953346.
HNHOD01	5455	915341	1 - 548	15 - 562	
HNHOD62	5456	852995	1 - 378	15 - 392	
HNHOE53	5457	767329	1 - 619	15 - 633	
HNHOE03	5458	922028	1 - 482	15 - 496	AA311412.
HNHOF07	5459	952291	1 - 438	15 - 452	AA310235.
HNHOF92	5460	790034	1 - 623	15 - 637	
HNHOG384	5461	782316	1 - 540	15 - 554	
HNHOG386	5462	785004	1 - 558	15 - 572	AA663481.
HNHOH10	5463	963562	1 - 546	15 - 560	
HNHOI03	5464	923072	1 - 698	15 - 712	AA682500.
HNHOM92	5465	792328	1 - 358	15 - 372	AL031277.
HNHO016	5466	959616	1 - 1089	15 - 1103	H56490.
HNHO025	5467	859826	1 - 602	15 - 616	

HNHO074	5463	915462	1 - 492	15 - 506	AP000700, and AP000701.
HNHO087	5469	787562	1 - 407	15 - 421	
HNHOPI0	5470	963539	1 - 527	15 - 541	
HNHOQ16	5471	767877	1 - 414	15 - 428	
HNHOS70	5472	756593	1 - 342	15 - 356	
HNHOS75	5473	766736	1 - 365	15 - 379	
HNHOT10	5474	963631	1 - 305	15 - 319	
HNHOT11	5475	923065	1 - 470	15 - 484	
HNHOT95	5476	795331	1 - 86	15 - 100	AF064861.
HNHOU20	5477	773797	1 - 364	15 - 378	U91319.
HNHOU68	5478	806090	1 - 449	15 - 463	
HNHOU94	5479	793514	1 - 352	15 - 366	
					AI471543, AA127353, AI298079, AW169537, T40617, AW167267, AI273968, AI718446, AI287485, AA199692, AW162288, F13749, AA69647, AI567076, AI633274, AI038990, AC007126, AC003006, AC000353, AL023375, AC005180, AC005829, AL031848, AL023216, AL135744, AC002984, AL049569, AL003147, AL035658, AC002404, AC008101, AC005295, AC005154, AC006971, AC006285, AC016026, AC006037, AC007999, AP000090, AC006077, AC006023, AL021707, AP000044, AP001112, AC005157, AL049795, AC006536, AL096712, AL035387, D87675, AL022315, AC004222, AP001065, AL050318, AL133297, AC006013, AC006125, AC007216, AC005144, AC006544, AC005839, AL022238, AL049829, Z84469, AL035659, U95742, AC002470, AC006050, Z84484, AC005839, AL022238, AL049829, Z84480, AL035422, U95740, AC005412, AL049636, AC007227, AC008372, AC007182, AF134726, AC006538, AC003009, AL031291, AL049830, AC007919, AC005785, AC006211, AC005815, U91326, AC005060, AL021546, AC006543, AC007845, AC004765, U47924, AC004019, AC006578, AL022476, AP000557, AL033376, Z99716, AC002565, AC007537, AL049776, AC006480, AC008064, AL022163, AF196969, AL023494, U66060, AC002544, AC004638, AC005794, AC007899, AL096773, AC003102, AC006195, AC005740, AL023553, Z83840, AC002094, AL121603, AL031296, Z97196, AL122020, AP000512, AC005821, AC005969, AC000003, AC007878, AL035703, AC004945, AC007324, AL033392, AC006312, AL024498, AC004223, AC010849, AC002429, AC004821, AC002369, AC004816, AC008079, AF129756, U80017, AC005019, AC005846, AC005071, AC009516, AC002310, D84394, AC006251, AC000013, AL133448, AL049766, AC005069, Z93020, AC004808, AC005668, AP001053, AC016025, AC005081, AL031289, AC005535, AC005332, AC004099, AC005225, AL078581, AC005523, AC005231, AC005899, U91319, AL080242, AL031281, AC002425, AC006127, AL096701, and AL022721.
HNHOX09	5480	854882	1 - 691	15 - 705	AA179093, W05670, H75806, AL137564, and AB028998.
HNHOX10	5481	963545	1 - 509	15 - 523	

HNHOX31	5482	859820	1 - 509	15 - 523	
HNHOX89	5483	786411	1 - 504	15 - 518	
HNHOZ04	5484	923013	1 - 374	15 - 388	
HNHOZ90	5485	787488	1 - 644	15 - 658	
HNHPC08	5486	952246	1 - 360	15 - 374	Z56336.
HNHPC36	5487	859819	1 - 452	15 - 466	
HNHPC72	5488	772970	1 - 348	15 - 362	AA421740.
HNHPD04	5489	974103	1 - 489	15 - 503	
HNHPD07	5490	952244	1 - 520	15 - 534	
HNHPD13	5491	859815	1 - 480	15 - 494	AC005828.
HNHPD86	5492	784919	1 - 701	15 - 715	AA928156.
HNHPC61	5493	784432	1 - 516	15 - 530	AL041914, AA262042, R14254, AL041237, F13514, and AL133057.
HNHPC66	5494	859812	1 - 882	15 - 896	N7074, A1804923, AA934526, A1992261, AW140138, W88993, A1077351, A1793312, C06015, D80164, D80195, D51022, D59502, D80038, D801026, D80247, D59467, D59275, C14389, D80227, D58283, D80133, C15076, D80439, D80022, D80391, D59787, D80269, D80166, D80193, D59619, D80210, D80240, D80045, D50979, D59839, C14331, AA303409, AA305578, D51423, D51799, D80253, D80043, C14014, D81030, D59889, D80196, D80212, D80219, D80268, D80366, D80188, D80522, D50995, D59927, D80157, T03116, D57483, D5825923, AA809122, D45260, H67866, C03092, AW177440, AW178893, D58246, D80251, D59551, D59503, D80238, A1525917, T11417, AW375405, F13647, D59317, A360811, A152235, H67854, A1535686, A1525215, A1525920, AW360817, AW360834, C14227, D59627, C14973, A152527, D80064, D80014, AW178906, T03269, AW179328, T48593, AW375406, AW378534, A1525925, AW179332, AW377672, AW179023, AW178905, AW177731, AW378528, AW178762, AW179019, A1525242, AW378533, AW378532, AA514184, A1557774, A1525912, AW377676, D59695, AW178907, AW178908, A1525237, D45273, Z21582, AW178914, AW178774, AA285331, A1537751, AW367950, D80168, C16955, AW378542, Z33452, T02974, D52291, AW378525, AW352163, C14298, A1525239, D51213, T03048, A1525228, D31458, A1525216, A1525238, A1525969, A1525903, AF058696, A82595, AB028839, A1312110, AR060385, AR008278, A84916, AB002449, A62300, A62298, AR018138, I14842, I50126, I50132, I50128, I50133, AR054175, AR016691, AR016690, U46128, AR016514, A26615, Y17187, AR060138, A45456, Y17188, A94995, D26022, AR008277, AR008281, A26615, AR052274, A43192, Y12724, A63261, A43190, AR038669, A25909, AR066488, Y09669, AR066487, A70867, A67220, D89785, A78862, D34614, A30438, AR062872, AR008443, I79511, A64136, A68321, D88547, D50010, I82448, X68127, AR016808, X82626, AR025207, and AR060133.
HNHPC85	5495	783821	1 - 395	15 - 409	D80022, D80195, C06015, D80302, AA809122, A1525237, H67866, D58246, D80247, D81026,

						C15076, C14014, D59551, D80238, A1535686, D59503, D80164, D80045, D59502, A1525235, D51423, D80168, D80133, D80038, Z21382, D80269, H67854, AA305578, D59627, D80188, D59467, D59275, D50979, D80227, D80024, C14389, D59610, D51221, D51022, D45260, D80043, D50995, D80439, C14973, D45273, D81030, T03116, D80196, C14227, D80251, D80391, C03092, F13647, D59787, D80157, D80166, D80212, D80366, D81111, D80193, A1525215, D59619, D80210, D57483, D80240, T11417, D59317, D80253, D80219, D58283, D80064, AA305409, D59859, C14331, D80014, D80268, D59889, A1525923, D51799, A1525242, D51103, C16955, D59474, D80248, D80522, Z33452, AA514186, AA514188, T02974, D80241, T03048, A1525920, A1525912, D59927, A1535665, C14344, C14407, D80378, A1525917, A1525227, C13958, D58101, D59695, T02868, D52291, H67858, C14298, A1525238, C05763, C14077, A1557774, D31458, Z30160, A1525216, A1525925, D80949, A1525238, C05763, A1557751, A1525222, AA514184, A1525969, A1525903, A1535961, A1525907, A1525914, A1525922, A1525978, AB002449, A82595, AR018138, T14842, AR060385, AB028859, A1132110, A84916, A62300, A62298, T79511, AR054175, AR008277, AR008281, AR008278, AF058696, I82448, and AR016808.
HNHPH29	5496	934456	1 - 486	15 - 500		
HOIAE91	5497	935322	1 - 548	15 - 562		AW450671, AA936632, AA373754, AW301553, A4887804, and AA523682.
HPSAA31	5498	739041	1 - 563	15 - 577		AA371521, and AA371570.
HPSAA50	5499	723558	1 - 299	15 - 313		AA371530, AA371532, AA283143, and AA4985190.
HPSAA63	5500	536776	1 - 316	15 - 330		AA371537, AA371640, and AA371643.
HPSAB25	5501	677474	1 - 321	15 - 335		AA371618, AA371540, AA652942, AC005365, and AL080317.
HISAT03	5502	925082	1 - 309	15 - 323		
HISAT03	5503	683251	1 - 505	15 - 519		
HISAT03	5504	666207	1 - 391	15 - 405		H64038, and W04139.
HISAT03	5505	531280	1 - 392	15 - 406		AA916748.
HISAT03	5506	907593	1 - 328	15 - 342		A1568725, and AW084480.
HISAT03	5507	781718	1 - 233	15 - 247		
HISAT03	5508	716434	1 - 654	15 - 668		R81464.
HISAT03	5509	781405	1 - 380	15 - 394		N99795.
HISAT03	5510	688006	1 - 439	15 - 453		AC003689.
HISAT03	5511	677717	1 - 445	15 - 459		AC000119.
HISAT03	5512	866951	1 - 365	15 - 379		H58978.
HISAT03	5513	765376	1 - 569	15 - 583		AW022615, N51894, and D62269.
HISAT03	5514	888871	1 - 437	15 - 451		A1111779, and AF090944.
HISAT03	5515	713143	1 - 168	15 - 182		D63189.
HISAT03	5516	699586	1 - 609	15 - 623		AW401775.

HSATR76	5517	659994	1 - 488	15 - 502	HS5088.
HSATS23	5518	524369	1 - 288	15 - 302	AA502450, AI590404, AI278972, AI251024, AW028376, AW273201, AW273146, AA613761, AW28341, AW104163, F31670, AA338474, AA936099, AA364082, M77908, AA467740, AW023515, AW407679, AW409626, H92442, AI318548, AI567676, AA342029, AI344906, AI885134, AI754257, AA937618, AI445699, AA468135, AA533011, AA812133, AI053673, AW080118, AI434103, AW277125, AA219166, AA382171, AA745395, AA745336, AI572680, T34066, AA364199, AW149241, AA847340, AA707430, AI281622, AA570243, AI884404, AA707438, AW004592, AW707446, AI358557, AI032411, AI734119, AA489897, AA640305, AI370470, F25183, AA503459, AA668421, T03576, AI732720, AA300049, AA975894, AI558404, AA676462, AA730795, AA668148, AI003086, AA658890, AA468921, AI732327, AA487053, AI701898, AA303002, R95751, AW157424, AA172103, AI702049, AA846014, AW069110, AA328535, H51612, AA055647, AW265468, AI590442, AA309287, R33053, AI960990, AI138262, AA847341, AW148821, AI619727, AA663579, AI207744, AW192930, AA610644, AA365049, R12500, AA147521, AA362670, AW021674, H47554, X84712, AW410844, AA829565, AA421536, AA991640, AW406139, AA657392, AW238242, AW409621, AI064968, AA829086, AA350081, AT744963, AI7468079, AI521019, AI037723, AW307722, AI719372, AA984891, AI268818, Y18000, AC004882, AC005529, AP000493, U02057, AC004531, AP000689, AI049872, AC004999, AI034417, U91326, AC002544, AC005300, AC005756, AB003151, AI050318, AC005535, Z69366, AC005015, AC006449, AC004263, AC005409, AI132716, AF196972, AC005914, AC005695, Z83844, AI035086, AI049694, U07000, AC005319, AC006241, AC004887, AC002036, AI050307, AC004859, AI031697, AC007536, AC007537, AI008731, AI022316, AC004386, AC006077, AB025285, AI0316913, AI020995, AF154840, L81576, AC004223, AC005325, AC002558, AI021391, AC007993, Z98256, AD000092, AI008710, AI109628, AI133448, AC004125, AB033024, AP000884, AC005412, AC006511, AC006057, AC005159, AC007227, AC007040, AC008372, AC004797, AI080233, AC005755, AC005839, AC004668, AC004770, AC004972, AC007036, AC002045, AC005565, AI049761, U89337, AC004674, AC005370, Z99716, AC007690, AI031680, AC004997, AI117258, AC007421, AC007387, AF11198, Z82208, AI121603, U32112, AC004968, AC004526, AC006360, AI050347, X02571, M12901, A91683, AC007564, AC003042, AC012085, AI132712, AC005331, AC004653, AC005335, AC005684, AI022165, AF001550, AC005385, AI049643, AC005067, AC004033, Z82198, AC007193, AI033524, AC005921, AB023051, Z97630, AC004890, AI023880, AC004228, AC002418, AC005284, AC002991, AC004896, AC005702, AI031295, AI021578, AI049869, AF000352, AC004233, AI035413, AF091512, AC006487, AC005500, AP000211, AP000133, AP000039, AP000107, AI121655, AP000547, AC002107, Z95116, AC000134, Z69374, AC003012, AC002997, AE000638, AI031587, AF111168, Z98051, AI035652, AC005211, AC004950, AC004975, AI049776, AP000502, AC006254, AI031311, AC006137, AC002492, Z93017, AC004560, AC006088,



HSAT529	5519	689823	1 - 331	15 - 345	AL035659, AL251973, AC003976, AL031575, AL049829, AC000388, AL031983, U95742, AC002289, AC006001, AC005828, AC005375, AL035079, AC007051, AL030996, AP000347, AC005200, AC004019, AL096703, AL022336, AC004076, Z15025, AD000812, AC005913, AC002404, AC007686, AL035455, AL008734, Z81450, AL133163, AC005004, AC007919, AC006315, U85195, AC005102, AC007216, AC002553, AJ003147, AC005185, U91323, AL021407, AC005305, Z82195, AF126024, AF205588, AL035681, AC004031, AC005089, Z83843, AC007277, AL050348, AP000260, AC002369, Z84466, AL020997, AC006512, AC005722, AC005694, M33764, AD000833, AC004825, M63796, AC010205, AL008582, AP033566, AC004000, AF126023, AL050308, U78027, AL109984, AC004476, AL035450, AP038458, AC006509, AC010197, AC005610, AC005933, AL133246, and AC005098.
HSAT529	5519	689823	1 - 331	15 - 345	AC005799.
HSAT536	5520	732640	1 - 356	15 - 370	
HSAT536	5521	796565	1 - 409	15 - 423	
HSATV34	5522	732184	1 - 447	15 - 461	
HSATW22	5523	531171	1 - 316	15 - 330	
HSATX46	5524	866059	1 - 239	15 - 253	AW166467, AL150813, AL051055, AW291572, AA186962, AL041305, R09223, AL028763, AL291690, AL692187, AL040743, AA489560, R09224, AB014596, AF176022, AP000252, AP000134, AP000212, and AP000031.
HSAAU88	5525	757624	1 - 361	15 - 375	Z82206.
HSUAUB19	5526	954055	1 - 227	15 - 241	
HSUAUB90	5527	733714	1 - 117	15 - 131	AA480803, T24642, and AC004706.
HSUAUD05	5528	932502	1 - 249	15 - 263	
HSUAUD45	5529	531170	1 - 511	15 - 525	
HSUAUE23	5530	571385	1 - 163	15 - 177	
HSUAUE40	5531	866933	1 - 392	15 - 406	
HSUAUF18	5532	527038	1 - 384	15 - 398	AA479823.
HSUAUG15	5533	953628	1 - 907	15 - 921	AT700608, AL475748, AA261852, H43976, AA455641, AL435512, AA878284, AA721182, AA526613, AW073756, D56003, AW239128, AA367190, AW175589, AA248657, AA336678, AW402312, AA113904, and AL049610.
HSUAUH65	5534	953873	1 - 357	15 - 371	
HSUAUH69	5535	870437	1 - 971	15 - 985	N33174, AL333084, AA810196, AA810519, AA417898, N25355, N44958, N31476, AA491035, and AA745500.
HSUAU05	5536	856886	1 - 412	15 - 426	AL000925, AL261943, AA614341, AW376738, AL000930, AW136154, AA209435, AC005694, AC005527, AC005529, and AC002991.
HSUAU26	5537	950714	1 - 426	15 - 440	
HSUAU67	5538	866919	1 - 368	15 - 382	

HSALQ94	5539	526936	1 - 461	15 - 475	
HSALQ94	5540	557848	1 - 151	15 - 165	AC004975.
HSALUW10	5541	967600	1 - 428	15 - 442	
HSALUW71	5542	537544	1 - 262	15 - 276	
HSALUJ28	5543	744899	1 - 666	15 - 680	FI3740, and AI913247.
HSALUJ27	5544	685253	1 - 693	15 - 707	R98418.
HSALV44	5545	866900	1 - 198	15 - 212	AC003102, 297635, AC008126, and AC005856.
HSALV46	5546	742073	1 - 174	15 - 188	AA907167, AA910829, AA98986, AA903887, AA825361, AA045623, AI222950, AI215879, AI870657, AA902506, and AA916305.
HSALV805	5547	932496	1 - 297	15 - 311	
HSALV819	5548	866899	1 - 308	15 - 322	H80879, R69751, H80878, R70467, AC004985, and AL022158.
HSALV841	5549	584978	1 - 255	15 - 269	
HSALV876	5550	967286	1 - 311	15 - 325	
HSALV835	5551	932462	1 - 264	15 - 278	
HSALV881	5552	959949	1 - 574	15 - 588	
HSALV817	5553	417452	1 - 188	15 - 202	AI637636, AW082668, T94015, AI332352, AA847421, AI565225, T93337, and AF115510.
HSALV895	5554	574243	1 - 564	15 - 578	AC005189, and AC005532.
HSALV144	5555	715837	1 - 460	15 - 474	AA481619, W88558, AA455714, AA455659, and AA481553.
HSALV146	5556	717837	1 - 448	15 - 462	AW021987, and AC004036.
HSALV159	5557	579060	1 - 364	15 - 378	
HSALV177	5558	739521	1 - 335	15 - 349	
HSALV143	5559	714418	1 - 584	15 - 598	T95438, AA004549, T95461, T95342, T95342, R01904, R01953, T95357, and AA704164.
HSALV807	5560	935797	1 - 221	15 - 235	AA731064, AW450807, AA513079, AA602113, AA503400, F36001, AA658915, AA844750, F24885, AI929819, T89864, F34389, AI748847, AI832751, F21165, AI929660, AA632963, F36287, F28779, F37620, AA627162, C00120, AP000046, AP000114, AP000303, AF193597, AF193607, AF161428, and AF161430.
HSALV17	5561	920412	1 - 416	15 - 430	AC006468.
HSALV37	5562	574709	1 - 339	15 - 353	
HSALV053	5563	531111	1 - 235	15 - 249	
HSALV082	5564	531398	1 - 118	15 - 132	
HSALV010	5565	964950	1 - 402	15 - 416	
HSALV046	5566	574784	1 - 314	15 - 328	AW104664.
HSALV056	5567	522431	1 - 430	15 - 444	AI299938, and AI109798.
HSALV06	5568	936049	1 - 87	15 - 101	
HSALV74	5569	827090	1 - 213	15 - 227	
HSALV517	5570	574269	1 - 112	15 - 126	

HSAVS46	5571	526756	I - 419	15 - 433	<p> F31867, AA507499, A714110, A1587583, A1587565, A1499954, A1521525, A5W020150, A537368, A5W02831, A4356376, A126640, A8100426, A1926102, A4A808725, A517665, A1041681, A1041682, A1246192, A805261, A422573, A2W75432, A2751955, A865980, A4127329, A4857296, A121287, H85808, A5568314, A1697239, A1039309, A697242, A1539024, A166611, A1246996, K14692, A1653999, T03298, T69933, A4492105, A171455, A5W089016, A4610433, A559423, F35684, T94072, A1134332, A4366601, A484892, A5W410389, A1049955, A1076236, A4558404, A514020, A4468923, A598605, A103358, A567391, A5W09227, A5W16016, A4128947, T69571, A4720582, A1880889, A4773289, C75034, A4480486, A0947265, A4714453, A1869797, A4487720, A1687343, A462920, A5524800, A5W08950, A4521356, A1249688, A4229988, A4371410, T06210, H90878, A1242614, A4493110, A11366902, A4130696, A503298, A1820266, T54464, A548655, F36050, A4468196, A4405726, A463256, A5W02311, A1223968, A4654482, A537800, A1283938, A1521042, A4862312, A4310557, A1709174, A4297661, T52772, A5302017, A4487209, A4018105, A1917134, A4469327, A4701122, A4215585, R03854, A1188049, Z23147, A4862029, F00533, A1929796, A4666295, A4562349, A5W07759, T53061, T47133, A5W75296, A5W274078, A1583532, A1282629, A4613627, X753355, A5C05129, A1096678, U02047, A5C05399, A1049766, A1021578, A5C05180, A1022726, A5W15164, A1003147, M84472, A5W10064, A5C06327, A5W00211, A5C06441, A1035405, A5W00563, A1049869, A5C05379, A5C05632, A5C04922, Z95152, A5C02544, X87344, A5C004132, A5C05328, A5C04859, A5C05253, U47924, A5C05740, A5W00133, A5C05932, A5C030453, U96629, U54879, A1097602, A5W00350, A5C05291, A5C05520, A5W01065, A5C06285, A5C05480, A1022237, A5C04876, Z83822, Z85987, A1109952, A5C04531, A5C02985, A5C04317, A5C02551, Z93023, A5C016025, A5W1078, A5C02425, A1109798, A5C04975, A5C04933, Z97054, A5C05015, A5C060111, A5C003684, A5C05071, A5W30876, A1080243, Z83844, A18671, A5C05972, A5C05088, A5C05516, A5C04084, A5C04851, A5C00578, A1096791, A5C004212, A1022316, A5C05378, A5C02314, A1021155, Z98752, A5C05231, A5C05159, U89337, A5W129756, A5C04799, A5C005913, A1022329, A5W00355, A5C05345, A5C007199, A5W00509, A5W17403, A5W006689, A5W008812, A5C066111, Z84466, A5C005011, A1035460, A1008718, A5W00558, A1049795, A5C02996, A5C08040, A5C05776, I34294, A5C05696, A1031121, A1035422, A5W00813, A5C05736, A1034417, A5C04224, A117659, A5C05822, A5C05003, Z83826, A5C06391, A5C05412, Z75407, A1109758, A5W196779, A5C05305, A5C005069, A5C02390, A5W069291, A1021808, A5C07546, A5C05512, A5C005911, A5W00347, A5C095868, A5W207530, A5C06146, A5C007792, A5C03510, A5C02455, A1031584, A5C00483, A5C007277, A1031681, Z93241, A5C07686, A5C05209, A5C04963, A1035421, A5C004985, A5C02404, A5W00553, A1109627, A5C03689, A5C005535, Z68285, A1035430, A5C004529, S42653, A5C009516, A1049874, A5W00415, A1049759, Z98200, A5C007450, D84394, A10304408, Z682788, A1034420, A5W00692, A111168, A5C004811, A5C005829, A1021304, </p>
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HSAYV76	5572	866888	1 - 81	15 - 95	AL049780, U95739, AL009181, U95742, AC004771, AC006530, Z81364, AC000082, AC007842, AC005206, AL024498, AP000337, AC021092, AC002375, AC005568, U58668, Z85986, AL031291, AC005914, AB003151, AC007681, AC005355, AL031846, AL031311, AB012286, AC002429, AC001650, AC004999, AL031775, AC004148, AC002059, AC005952, AC004381, AL139054, D86995, U95740, AL034402, AC005484, Z84476, AL031282, AC004491, AC003002, AL139052, AL050332, AP000505, Z95113, AC006597, AC002395, AL023553, AF051976, AL022327, AL022476, AL03572, AP005112, AC007536, AL050331, AC004913, Z82206, AC005620, AL031447, Y10196, AC006511, AC006071, AC005531, AL049760, and AC005523.
HSAYV77	5573	920565	1 - 314	13 - 328	AW058430, W21392, AW079237, AW376931, H96580, M86143, AL109839, Z93016, AC009509, AC005519, AC004000, AC005532, X74962, AL031657, and AC004003.
HSAYV78	5574	577549	1 - 645	15 - 659	AL304948, and AC006430.
HSAYV79	5575	925582	1 - 220	15 - 234	AA828835.
HSAYV80	5576	967490	1 - 130	15 - 144	
HSAYV81	5577	970695	1 - 453	15 - 467	
HSAYV82	5578	974267	1 - 443	15 - 457	AW276782.
HSAYV83	5579	744614	1 - 636	15 - 650	
HSAYV84	5580	574287	1 - 350	15 - 364	
HSAYV85	5581	526958	1 - 295	15 - 309	
HSAYV86	5582	842039	1 - 365	15 - 379	AA297496, AA302682, AA805018, AL904944, AL369076, AA302660, R08161, AL1915081, AL054090, AL246061, AL713705, AA326452, AW021007, AA226770, AW069412, H02532, AA862029, AW265688, F17537, H71678, AA586433, AL249853, AA225795, AA744095, AL048275, AL536834, AA493789, AA744423, H53217, AW272740, T83057, AA599199, AL754170, AA156147, AL635609, AL064786, AL076418, AA864426, AL284543, AA373861, AL254770, AA626595, AW169035, AL251034, AA381787, AA904211, F00564, N94342, AA095721, AL250552, AA056248, AA566084, N29936, AL270047, W24312, R35259, AA313219, AA282219, AA148197, AA834807, AA302978, AW192648, AL039801, AA503018, AA831801, AL866971, AL251203, AL475724, AL251284, AA668166, AA714073, AA683069, AA654778, AA857812, AL312090, AA525807, AL312784, AA702717, N73060, AL121782, AP000692, AC000025, AC005856, AL096763, Z85987, AC006511, AC005702, X87344, AL049835, AC006312, AL022721, AC006960, AC005527, Z98941, AL049780, AL139054, AL034549, AC006010, AP000555, L34294, AC006241, AC007073, AL035420, AC005529, AL035072, AL109628, AP001318, AC004448, AC007731, AC005500, AC004019, AF064861, AF111168, AC002394, AC005602, M87889, AL031680, AC001267, AC004985, AC004000, AL109839, AC007199, AC004832, U95743, AC004834, AC005823, AC004531, AC005868, AC007201, AL132642, AC004655, AC002470, AL132777, AC005829, U02051, AC006234, AC003109, AC003025, AC006057, Z95704, AL022320, AF139813, AC007637, AC006115, AC005257,

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HSAV265	5583	574192	1 - 314	15 - 328	
HSAWA25	5584	577281	1 - 307	15 - 321	AA505186.
HSAWC89	5585	785988	1 - 926	15 - 940	AA134230, AL1977676, AF168132, and AL080140.
HSAWG75	5586	574223	1 - 148	15 - 162	
HSAWH47	5587	720535	1 - 551	15 - 565	T85672.
HSAWI18	5588	666842	1 - 325	15 - 339	
HSAWI50	5589	742713	1 - 372	15 - 386	AC003681, AP000952, and AC008124.
HSAWI36	5590	866874	1 - 911	15 - 925	AB035717, AL038558, B73057, AW450490, AW235225, AL650526, AL633900, AL493578, AA78147, AL252617, AF158094, AF077118, R73058, and AL344281.
HSAW793	5591	751429	1 - 171	15 - 185	AP000150, AP000009, and D83253.
HSAWI80	5592	792893	1 - 310	15 - 324	H67030, H68111, AL1358229, AW406755, AL365988, F29989, AA501614, AA657835, AA525153, AW023111, AL278972, AA720732, AA176605, AA659535, AA579053, AW168433, AA634786, AA551798, AA573020, AA715814, AL241976, AA827960, AA579184, AL136829, AL358089, AA574286, AA438643, AL689019, AL275183, AA778140, AA772016, T29180, U18399, U67822, U67823, AC007298, AC007312, X55922, AP000692, S48196, AL133245, U85195, AC005338, AB006658, D87008, L81893, D88268, AC004921, AL133289, AC005620, AC004167, AC001066,
HSAW67	5593	883825	1 - 652	15 - 666	

					AC006120, Z54334, AL121603, AC005037, AC005678, AL020997, AC006077, AL109627, AC004805, AC003041, AC005095, AC004019, AL035448, M87923, AC005681, AC002369, AC005777, AC004030, AC005089, AC005212, AL121825, AC005288, AC004966, AP000031, AL021394, AL008629, AL022320, AC007166, AL035405, S42659, AC006111, AL020996, AP000255, AC005696, AC002316, AC004150, AL034548, AC007191, L47228, AC000353, AC005527, AL080242, AC002039, AC004472, AC005944, AC007707, AC004491, AB023049, Z93930, U67274, AC004814, AC005803, AC005004, AL133163, AC006480, AC005971, U78027, AC004263, AC002400, AP000354, AC004996, AP000503, AC002350, AL031005, U16300, AC005911, AC005740, AC006461, AP000113, AC004678, AC007387, AP000135, U80017, U95740, AC005013, AFI65926, AC004020, AL136295, AL109628, AL008582, Z68756, AC006530, AP000553, AL034376, AC007688, AC004234, AL049780, Z94162, AL035653, AF045333, AL021134, AC007510, AL050318, X53550, AC005539, AP000359, AC005703, AF001549, AF043555, AL078477, AC005529, AC007308, AC006121, AC005104, AL022067, AC007731, AF134726, AC007216, AC004933, AC004802, AC002544, AC005500, AF015166, AC007292, AF196969, AP000689, AC004821, AFI99339, AP000023, AL049757, UJ03147, AC005215, AL022329, AL096803, AL049776, AL021397, Z98884, AC004222, AL035072, AC006511, AFI190465, AC005993, AC004531, AC005412, U75285, D84394, Z83822, AL034429, AL109758, AC005081, Z98950, AP000688, AC002430, AC007225, AC004985, AC005102, AC005701, and Z85986.
HSAW191	5594	522474	1 - 241	15 - 255	
HSAW196	5595	577267	1 - 436	15 - 450	
HSAWV18	5596	666841	1 - 138	15 - 152	AA835667, and AL936498.
HSAWY11	5597	967489	1 - 494	15 - 508	
HSAXB47	5598	720536	1 - 795	15 - 809	
HSAXB84	5599	574172	1 - 402	15 - 416	
HSAXB95	5600	796006	1 - 316	15 - 330	
HSAXC60	5601	579044	1 - 401	15 - 415	F28958, F37192, and F00608.
HSAXD03	5602	924900	1 - 241	15 - 255	
HSAXD08	5603	959939	1 - 369	15 - 383	
HSAXD18	5604	575543	1 - 126	15 - 140	AL109628.
HSAXD73	5605	574274	1 - 383	15 - 397	R63784.
HSAXD75	5606	526777	1 - 339	15 - 353	AC004675, and AF088219.
HSAXF03	5607	924899	1 - 280	15 - 294	AA281106, and AC005488.
HSAXG18	5608	574165	1 - 375	15 - 389	T07213, AA483211, AL689564, AL046171, H81283, F35659, AA604326, AA446474, AA443065, AW086465, AA027637, AA593359, N55273, AA605274, AL131366, AW168433, AA610420, H57381, R53899, AA863453, AA640739, R77158, AW238016, AW238278, T69435, R79157,

					<p>             ALD00051, AL822577, W35195, AA166835, W23546, AA630030, T71030, AL672135, AA931647, F23325, AL141675, AL049616, AL561335, AL860020, AA703891, N66684, H81505, AW270284, AF770072, AA834712, AL020729, AA357552, AL084624, AL880168, AA242863, AL352078, AT758852, AA538227, AW169687, AA557854, AL349874, T94866, AA937686, F26152, T55236, AW406659, AA678443, AA346454, AA663306, T94116, AL345522, AA658235, AL683294, AA587662, AL801591, AA342681, AL344844, AA640053, T71198, AL298977, AL252141, AL251111, H77751, AA515224, AA52406, AA581903, Z85986, AC007207, AC002551, AP000688, AL035668, AL031393, AC004854, U91325, AB000880, AC004967, AC002369, AC005081, AC007298, AC005799, AL022476, AF045555, AC006031, AP000507, AC005839, U20210, AL031284, AC007114, AL021407, AB000882, AC004896, Z83844, AC006480, L78833, AL021453, AC007110, AC004895, AC007358, AC004655, AC004841, AL023284, AF109907, AC005911, AC005089, AC004941, AL031428, AP000008, AC004894, AL031432, AC005243, AP000704, AC005274, AC005619, AL008634, AP000014, Z97198, AC005377, AC005881, AP000556, AL035079, AL031577, AL031643, AC009300, AL110122, AL050348, AC005874, AF134471, AC005913, AC006076, AC006333, AL121825, Z84718, AF002223, U95626, AF044083, AC005280, AC005922, AL022069, AP000245, U89335, AC004531, AC035682, AL031683, AL021397, AJ006995, AC004659, AF033356, AF124731, AC004776, AC004972, AC018769, AC000120, AB020859, AC008033, AC006241, AC005072, AC006989, AL022396, AL133382, Z84497, AP000657, AL031120, AC009241, AC0015831, AC006287, AC006285, AP000966, AC006958, AC005562, AC005822, AC006075, AC006039, AC004931, AB028898, AC002087, AC005703, AL022328, AC004467, AP000449, Z92540, AC011592, and AC008072, AL008582, AL049844, AL049650, AC002300, AL022165, AL024498, AL021391, and AC005484.           </p>
HSAXG30	5609	574280	1 - 456	15 - 470	<p>             T53845, and C04682.           </p>
HSAX107	5610	953871	1 - 236	15 - 250	<p>             AA846046, AA349016, AA230221, AA299100, AL119063, AA015948, N55076, AW194061, AL281622, AL046620, AW439724, H57802, W27084, AL446623, AA218874, AL251024, AA579281, AW069273, AA831919, AW083408, AA947352, AW029626, AL888050, AA639056, AL125143, AA714190, AA550959, AW018258, AL090059, AA551868, AL847209, AA338237, AA320380, M88762, AA338238, T73016, AA368329, AA701131, AL620014, AA363195, AA553409, M88762, AA338238, T73016, AA368329, AA701131, AL620014, AA363195, Z99716, AP000116, AF111169, AC005911, AC007263, AL031291, AC005925, AL035462, AC007308, AC005015, AC005200, AL109952, AL022316, AC006285, AC004531, AC007243, AC035411, AC005839, AC004526, AL122020, AL133245, AC010168, AC006130, AC006538, AC004890, AC000134, AF143866, AC002553, AL022336, AC007637, AL135744, AC004685, AL031295, AC005799, AD000864, AR036572, U91328, AL035684, AC006512, Z97876, AC002429, AC005821, AL024498, AC007488, U62631, AC005368, AL049694, AL009181,           </p>
HSAX147	5611	574159	1 - 444	15 - 458	

					AC005924, AC005409, AC002395, AC008062, AC006211, AP000503, AC005666, Z81364, AF001549, AC008041, AC005971, AL022318, AC004815, AP000211, AP000133, AC005346, AC006480, AL133448, AP000557, AL109984, AL022312, Z95116, AC004035, AC005362, AC006088, AL117355, AC005537, AC000353, AC004938, AF053356, U07561, AB020865, AC006312, AC006597, AL118516, Z49155, Z97056, AC005089, AC004796, AC004963, AL035071, AC005159, AC007207, AC005280, AC002425, AL049872, AB032988, AC004448, AC005153, AP000962, AL035072, L31948, Z97184, Z83840, Z98052, AC012085, AC007666, AC002401, AC005575, AP000049, AL022323, AC007371, AC003025, AC003048, AL079340, AL121658, AC006755, AL034553, AP000311, AC000052, AP000362, AC005049, AC005300, Z82212, AL022165, AC007193, AL033376, AC005589, U63721, AP000692, AC002094, Z93244, AC004084, AF139813, AC013853, AC002310, AL031659, AC005031, AC008101, AC004895, AL078581, AC005484, AC005943, AC006515, AC003071, AC002991, AP000048, AL021579, AL035454, AL035443, AC007546, AC016027, AF067844, AP000359, AC007793, AC016830, Z93017, AC004999, AL049759, U51561, AC0001643, AF016898, AC004228, AC005730, AL050350, AC002319, AL022238, AC006077, U07562, L81394, AC010205, X99832, Z84466, AC004967, AC007286, AC010170, AL022328, AP000044, AL096712, AB023048, AC005570, AL031737, AC004858, AF109907, AC000029, AL049569, AC005588, AF001550, Z99127, AL049653, AC002551, AC006958, AL008726, AL035445, Z97053, AC001226, Z95987, Z97054, AC005516, AC002126, AC005182, AC002470, AC004805, U91327, AP000031, U73109, and AB001523.
HSAX162	5612	531114	1 - 411	15 - 425	
HSAX1725	5613	964753	1 - 228	15 - 242	T98562, and AL031778.
HSAX183	5614	866840	1 - 350	15 - 364	AC005971.
HSAXM33	5615	866837	1 - 368	15 - 382	
HSAXM34	5616	526939	1 - 242	15 - 256	AC003007, and AC005632.
HSAXM44	5617	574173	1 - 316	15 - 330	
HSAXM68	5618	754061	1 - 310	15 - 324	
HSAXM91	5619	784470	1 - 229	15 - 243	AC004815.
HSAXO52	5621	726053	1 - 585	15 - 599	
HSAXO53	5622	727491	1 - 309	15 - 323	AA866609.
HSAXO65	5623	713784	1 - 244	15 - 258	AW009820, and AA568195.
HSAXO91	5624	725673	1 - 325	15 - 339	AC002331, AL034350, and AL033397.
HSAXR08	5625	959441	1 - 662	15 - 676	
HSAXR83	5626	866831	1 - 430	15 - 444	T78958, AA555594, T78906, and AL021453.
HSAXS44	5627	715896	1 - 327	15 - 341	AW294886.



HSA YA60	5628	650857	1 - 356	15 - 370	AL393338, AW241990, T92033, AA826386, H92152, AA665661, AA137025, AA334089, AA071151, R00203, AA757621, AL138252, AF207550, AL031984, AC005081, Z81367, Z95115, AC008124, AL031291, AC004491, AC005529, AC002350, AL035685, AC004882, AC005622, AC005015, AL049576, AC006001, X86011, AC006515, AC004382, AL049569, U89335, Y10196, AC005011, AC008044, AF196971, AL022316, AL031846, AF001348, AL031864, U91326, AF000493, AC006449, AC005618, AC003041, AL133304, AL031283, AC004536, AC007240, Z97632, and AC003010.
HSA YA80	5629	751139	1 - 620	15 - 634	AL031733.
HSA YA95	5630	856883	1 - 406	15 - 420	AF062359, and AC004049.
HSA YC17	5631	663910	1 - 590	15 - 604	
HSA YC39	5632	705409	1 - 362	15 - 376	
HSA YC34	5633	723425	1 - 425	15 - 439	R31954, R10634, and AW195428.
HSA YG62	5634	745692	1 - 390	15 - 404	
HSA YH09	5635	971427	1 - 613	15 - 627	AC003663.
HSA YH38	5636	731434	1 - 737	15 - 751	AH31434, AW162288, F13749, AL696793, AL245693, AL537538, AA284247, AL119691, N69462, AA176605, T06207, AA720732, AW304580, AW408767, AA486877, AA937427, AA524616, AA879053, AL866911, AL046746, N24909, AA448838, AT751162, AA493226, N22058, AW270258, AA587991, AL040051, AA806796, Z79422, U67810, Z30979, AC007040, AL031848, Z22650, AL049872, X55931, AL031282, U57005, AC002347, X74558, Z97206, AC006130, AC005786, AC005089, AC006241, AC006441, AL133382, AL033522, AC002301, Z83844, AC007845, AC000159, AC000880, AC004854, AC004835, AC004821, AL096701, AL031228, AL034420, AC003110, AC016025, AC006273, AC007242, AL135783, AC004019, Z94044, Z85986, AL049780, AC005280, AC007435, AL049869, AL133243, Z83826, AC000025, AC005527, AL024498, AL135744, AC004263, Z69917, AC000118, AC004974, AC004526, AC002544, AF109907, AL121658, AC002554, Z85987, AC004067, AC006312, AC005696, AC005663, AL139054, AC002369, AC005486, AC002404, AC002425, AL034423, AL122020, AC005778, AC006120, Z30994, AC004598, AC002395, Z84487, AL096791, AC005921, AB026906, AC005348, AC005920, AC006160, AC016831, AL031686, AL746003, AC005209, AC005940, AP000503, AL031311, AL050312, AC005071, AL133448, AL031255, AC009044, AL022336, AC007057, M63796, Z93023, AC005288, AL080243, AC006064, AC004499, AC002350, AL008582, AL035587, AC007226, AC005529, AC005939, AC005525, AC004257, AL008635, AC002455, AC003029, AP011930, U63721, AL022238, AL049830, AF045533, AL022318, AC004752, AC006001, AC004601, Z83851, AC007388, AL109984, AC005722, AC006211, AC000052, AC0007731, AC005684, AL035361, AC005954, AF134726, AF001549, AB000882, AL034402, AC005500, AP000509, AF205588, AC005179, AC005387, AC004834, AC003042, U63630, AC004449, AL035652, Z95114, AC005632, AC007308, AC006126, AC007773, AC003109, AF129756, AC016026, AC004791, AF064864, AC004647, AC004890,

HSAYK03	5637	881282	1 - 430	15 - 444	AC003982, AP000506, AC005520, Z98048, AL031276, AC005899, Z82179, AC004815, and AL049694.
HSAYK26	5638	681730	1 - 343	15 - 357	AL049569.
HSAYK79	5639	690056	1 - 356	15 - 370	
HSAYL46	5640	720352	1 - 593	15 - 607	
HSAYL64	5641	763847	1 - 346	15 - 360	AL7997238, and W85776.
HSAYL72	5642	951025	1 - 267	15 - 281	
HSAYL93	5643	920778	1 - 336	15 - 350	AL031657.
HSAYM75	5644	719241	1 - 351	15 - 365	
HSAYM91	5645	950486	1 - 362	15 - 376	
HSAYN79	5646	471037	1 - 665	15 - 679	
HSAYO71	5647	745703	1 - 339	15 - 353	
HSAYR35	5648	673897	1 - 212	15 - 226	
HSAYS26	5649	681725	1 - 372	15 - 386	D83781.
					AL824918, C14298, D51213, D80168, D80949, D59627, D51079, D80064, D59695, D81111, D52291, D59484, D58246, D45273, D80228, C16955, T03048, D80219, C14407, D59619, C14227, D80210, D80240, D59503, D80290, AW360780, D80258, D80014, D81030, D80212, D58101, D80439, D57483, D59889, D59653, D80195, T11417, C15076, D80251, A1535686, D80166, D80188, AW377669, AA305409, Z33452, D59859, D59610, A1557774, D80366, D80196, D51423, AW352172, D51799, D80253, C14389, D80024, D80247, D80045, C14077, D52059, AA305578, D80269, D80022, D58283, D51022, A1557751, D80391, D80164, D50979, D59787, D59502, D50995, C14331, D59467, D59275, D80043, D80227, D80241, D80133, D80157, D59027, D81026, D80302, D80038, H67866, D80193, AA314184, T02974, H67854, C14014, D51060, D51053, AA314186, AW377661, D80378, D80268, D80248, C05763, A1525216, C06015, AA314188, A1525228, D51103, C05695, Z21582, D51221, D80522, C75259, C14973, F13647, AA809122, D59511, C03092, D59474, A1525238, C04682, N66429, C14344, D51759, Z30160, D59373, D59317, A1525215, A1525222, C14957, D45260, T03116, C14046, A1525912, A1525969, H67858, A1525235, A1525920, T02868, C13958, D60010, A1525242, A1535961, D31458, A1525239, D50981, A1525227, F13796, A1525293, A1525978, A1525219, A1525237, A1525903, A1525925, AR016808, X64588, AB010386, A62298, AR018138, A84916, A62300, AJ132110, AR008278, AF058696, AB019943, U37689, A82595, J81198, AB028859, AB002449, A47134, AF060385, L14842, AR008277, AR000281, I79511, AR054175, and X72738.
HSAYS54	5650	730688	1 - 569	15 - 583	AA256081, AA594396, and A1035684.
HSAYW12	5651	856909	1 - 391	15 - 405	AL809688, and AC007201.
HSAYW75	5652	866818	1 - 290	15 - 304	
HSAZC11	5653	964994	1 - 343	15 - 357	

HSAZC18	5654	666442	1 - 362	15 - 376	<p>H92704, H94751, AA070456, B97658, AA465689, AA587113, Z85988, Z82188, AP000466, AL035461, U73641, AC005057, AC005484, AC004797, Z92709, AC005549, AP000501, Z84466, AL096791, Z98304, AP000155, Z68164, AC005370, AC005746, AF001549, AC007023, AC007637, AC004596, AL109798, Z82172, AC004253, AL035249, Z94044, Z98946, AF064483, AF064484, AL031774, AF067844, AL109627, AC002314, AC006077, AP000124, AP000171, AP000056, AP000331, AL109628, AP000193, AP000033, Z82194, and AC000122, AP000269, AP000032, and AP000103.</p>
HSAZC33	5655	702423	1 - 355	15 - 369	AC007269.
HSAZC41	5656	712326	1 - 334	15 - 348	AA601919, AW130614, AA653964, AA828680, AA551509, AA775416, W07032, AL372413, AA428414, AA593060, AA663634, AA723017, F26152, T28550, AL252207, AL510838, AA658235, AA828704, AA344959, AA694227, N43757, AA486680, AL284684, AA365347, T52732, AA450199, CL9058, AA320748, AA921649, AA310138, AL376100, AA365347, AA654855, AA301813, AA301600, AL254153, AL453383, AW074059, AL356904, AL564284, AW304531, AA326441, AL547286, AL922654, AA989126, AA776936, AW247132, AL216799, AA776921, AL270149, AA465321, AA372875, AL378729, AL037554, AL079667, AA372106, AL251949, CL17838, AL037910, AL254626, AL251996, AL252979, AL254937, AA828984, AL254440, N70442, AL254798, AA669634, AW269639, AL252112, T47348, AW086251, AL252828, AA639326, AL857261, AA984111, AL251380, AL251298, AL251598, AL501738, AL252933, AL254658, AL223508, AA535661, AL241970, AL254673, AA083136, AW086334, H58672, AL353595, AL251976, AA632612, AL270343, AL251968, AA584749, AW086356, AW086335, AL133348, AL031587, AC004230, AL049613, X03272, AC011604, AL109798, AL049830, AC002073, AC006064, L42240, AC006128, AL079340, AL031736, AL078474, X98288, AB017602, AC005703, AC005516, AC006141, AB016897, AC002286, AC002124, AP000359, AP000692, AL121603, AL002227, Z73338, AP000310, Z99755, M62424, AL025392, AF131217, AL035681, AL021579, AC005911, AL035684, AL109984, AC004858, AC006165, AL035413, AC004841, U61177, U66059, AC005736, AC006277, Z15025, AC002041, AL006995, AL008638, AC006449, AC0055215, AC004741, AC007688, AC004817, AF190465, U95740, AL109939, AC004383, AC0050571, D00591, AF109907, AC004647, AP000116, AL031722, AC005533, U47924, AC016026, AC005251, AC000392, AC004941, AC005358, AC004010, AL121934, AC004907, AC005971, AP000553, AC0009516, AC006312, AL031846, AL109799, AL049757, U73641, AC004098, AC000095, Z82182, AL035464, AC004990, AL021918, AL079295, AP000252, AC006464, Z82190, AC003977, AL049776, AB023051, AL031178, AC004712, AC006490, AC004895, AC004685, AC006455, AC006285, AP0000212, AC005356, AC009300, Z98884, AC004478, AC006241, AC005701, Z97352, U96409, AL009031, Z98950, AL021546, AC006116, AC002326, AF124731, AL1008629, AF064861, AC005838, AP000512, AC004814, Z86061, AC005368, AC006538, AL022320, AC005565, Z75890, AC003003, AC002527, AC000353, AC005288, AC006084, AC005837, AP001038, AP001040, AP000141,
HSAZC69	5657	757577	1 - 217	15 - 231	

HSACZ70	5658	866814	1 - 224	15 - 238	AP000089, AC005829, AC007848, AL133312, AC003112, AL050308, AL022718, AC006999, AL117694, AP000555, AP001067, AC005866, AC000134, AP045999, AC005595, AC004592, AP000947, AL132766, AL031282, U95742, AC007216, AC005696, AP000008, AL121655, AP000275, AL031120, AL033376, Z99716, AC002238, AL000704, AF017257, AC005320, Z85986, AL020993, AL049829, AC004213, AL000115, AF006752, AC010175, Z99774, AC007066, AL023281, AL121576, Z95114, AP000115, AF006752, AC010175, Z99774, AC007066, AL031432, AL034429, AL031283, AL049759, AF094481, AC000003, D87675, AL031054, AC003695, AC004066, AC007285, AL031284, AL049610, AC004750, and AP000355.
HSACZ72	5659	509611	1 - 352	15 - 366	AW170254, AA329068, H85372, T85640, M85706, T05004, D83207, and AL042605.
HSACZ91	5660	790196	1 - 313	15 - 327	AA460367, T34066, AL04088, AA632869, AL060630, AL823533, AL823535, AA837325, T10218, AL038977, AA363957, AW070476, AL613623, AL281401, AA748102, T05617, AA8357911, D82321, AL078409, AW169414, AL312424, AA525332, AL79978, AL292317, AC008928, AC008124, AC009509, AC006079, AL008715, AL031283, AC002045, AC004859, AC006121, AC006016, U95740, AC004750, AC005568, AC006381, AC002365, AF123462, AC004668, AL022165, AC004703, AC006487, AL034421, AC008134, Z95703, AC007551, AC004552, AP000503, Z83840, AF134726, AC007559, AL020998, AC005885, AL117338, AC005702, AP000350, AC005952, AC007226, AC005829, AC002470, AC004941, AC009464, AC007199, Z98749, AC005621, Z98036, AL049843, AL049759, AC005409, AL050308, AC005349, AC007193, AL080243, AL080250, AC006064, AC004990, Z98950, AL050322, AC007395, AF109907, AC005217, AL035079, AC002984, AD001527, AC002996, AC007308, AC002039, Z98048, AP000008, AP000704, AC002517, AC005531, AL049776, AC002395, AC005512, AL035420, AC002472, AC002477, AL121591, AP000308, AL031186, AP000048, AC004656, AC004695, AC004821, AC005696, AC004929, AC003029, AC009263, AC003071, AC004159, AF031075, Z83839, AC006323, AC004002, AC005856, AC005914, AC003682, AC007386, AC006255, A98026, Z81000, AP000279, AP000106, AP000038, AC002431, AC007388, AC003035, AC004817, AL022151, AF045555, AL034369, Z93241, AP000353, AC001231, AC002381, AC005081, AL035070, AC008072, AF002994, AC004042, Z82190, AL031466, AC002407, AC006061, AC005800, AC006006, AC004843, AC007681, AC004383, AC002312, and AL133246.
HSACZD30	5661	692708	1 - 300	15 - 314	D57483, D58283, D51423, D80043, D59275, D80253, D80166, D80195, D80022, D59619, D80210, D51799, D80391, D80240, D80227, D59859, D59502, D59859, D80212, D80196, D80188, D80219, D80038, D59927, D81030, D80269, C14331, C14389, D80366, D59787, D80193, D50979, D59610, D59617, D80164, C14429, D50995, C15076, AA305409, D80024, D80378, D80241, D80045, T03269, Z75259, C14014, D51060, D80251, AW178893, D80134, D51022, AW179328, AA305572, AW177440, D81026, AA514188, D80248, D51250, F13647,
HSACZE47	5662	887420	1 - 503	15 - 517	

HSAZE66	5663	725704	1 - 510	15 - 524	<p>AW378532, D51079, D80522, D58253, AW17875, AW369651, D80168, AW360811, AA514180, D80133, AW17862, C14227, D81111, AW352158, AW177505, AW375405, D80132, A910186, AW177501, AW177511, AW377671, AW375170, D21582, C05695, AW366296, D80268, AW360844, AW360817, AW375406, AW378534, AW179332, AW377672, AW179023, AW178905, C14298, C14407, C06015, D80664, D80247, A905856, AW352117, AW179024, AW176467, D80302, AW352171, D80439, AW377676, AW178906, AW177731, AW178907, AW179019, AW179020, AW378540, D59373, AW360834, AW360841, AW178909, AW177456, AW352174, AW179329, AW178980, AA285331, AW177733, AW378528, AW178908, AW178754, AW179018, D51103, T11417, D51097, AW179004, AW179012, A1557751, AW178914, AW378525, AW367967, D80014, D80157, C14077, AW177722, AW177728, D59503, AW179009, D51759, AW178774, AW178911, AW378543, AW352163, D58246, AW178983, AW178781, T48593, D45260, D80258, AW177723, D58101, AW352120, D59653, D59627, A1535850, C14975, A1557774, AW178986, A1525923, AW177497, C14957, D51231, D50981, AA809122, T02974, D51213, AW178986, A1525923, AW177497, C14957, D51231, D50981, C14344, AW177734, T03116, A1525917, D45273, D59317, C14973, D60010, D51221, D59474, A1525920, AA514184, A1535686, C14046, D59551, A1525242, D60214, A1525227, A1535961, A1525235, T03048, A1522222, C16955, Z33452, A1525912, AW378542, A1525925, AW378539, A1525215, C05763, H67838, AW360835, A1525237, C04682, A84916, A62300, A131210, A62298, AR018138, Y17188, X67155, AR008278, AF058696, A67220, D89785, A78862, D26022, A25909, D34614, B028859, D88547, Y12724, X82626, B2448, AR025207, A82595, A8002449, A94995, AR016808, AR060385, X68127, AR008443, A8012117, AR066482, I30126, I50132, I50128, I50133, A85396, A44171, AR066488, AR016514, A85477, I19523, A86792, AR060138, U87250, A45456, AR054175, A26615, AR052274, X93549, A43192, A43190, AR066490, Y09669, AR038669, AR066487, I18367, A30438, I14842, Y17187, D50010, AR008277, AR008281, D88507, A63261, T95511, X64588, AR008408, AR062872, A70867, AFI35125, AR016691, AR016690, U46128, D13509, A64136, A68321, AR060133, U79457, AFI23263, AB033111, AR064240, AR032065, X93535, A1525235, A1525237, A1525239, and AR008382.</p> <p>A1571656, T48723, F27015, A710180, A1471455, AA946848, A1687343, A1661536, A4657835, AA728894, AA440368, N41775, A1076236, A8001649, A1583291, A8110647, AA992126, AA514020, A156440, A157005, A1028510, F23327, A4533054, R69819, AA4298362, AW083934, AA229776, A1583142, F30138, AA485289, H79308, A1026078, F06088, A1025181, H62530, AA527934, A1824476, A1340151, AA399710, I12857, T47138, AA608561, A1823705, A1925065, A1025930, AW088631, AA232928, N68449, T50363, AA262769, AA487892, AW238253, H24957, A4559205, A1880324, Z84487, AL049776, AL031602, AL035457, AC007371, AC005189, AC006487, AC005332, AL009179, AC008069, U80017, AC002432, AC005696, AC006211, AL034429, AC007684, AC006948, AC004383, AL022323, AC0202663, AC008372, AC006126, AC006312, Z98200, AC006079, AC004099, AC002310, AC007327,</p>
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			15 - 400	
		787070	1 - 386	
		719615	1 - 413	
		9271161	1 - 398	
				15 - 412
				15 - 427
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HISA2P34	5672	796044	1 - 482	15 - 496	AA295039, AC007793, AC005250, AP000345, L78810, AC005664, AC005547, AP000346, AC008069, and AC002563.
HISA2Q04	5673	927174	1 - 438	15 - 452	AL121603, and AL049776.
HISMBAB04	5674	927420	1 - 320	15 - 334	AL024508.
HISMBAB53	5675	777597	1 - 332	15 - 346	
HISMBB53	5676	964887	1 - 142	15 - 156	
HISMBBD29	5677	690190	1 - 560	15 - 574	
HISQFR23	5678	676362	1 - 425	15 - 439	AL080151, AL989391, AL651717, and AA927298.
HISYAD19	5679	668590	1 - 118	15 - 132	N93672, H61817, R245189, AL699775, AW074713, AW069406, AW195989, AA780124,

				AA386120, AA405509, N80675, N27842, N73282, N26146, AA410443, H99474, N36171, A1375378, A1380262, A1802389, AW304896, A1635365, A1433692, N26092, N36091, A1580168, A1814370, A1857578, AW0006242, A1572079, U69196, N26547, AF042001, and AF084243.
				T20203, AA251849, and AW52678.
HSYBC05	5680	920174	1 - 644	AL0354609.
HSYBF51	5681	883699	1 - 446	AA370052, and AF021935.
HSYBL15	5682	660053	1 - 551	AA370052, and AF021935.
HSYBL77	5683	727842	1 - 334	T96708, and AW179197.
HSYCX75	5684	870939	1 - 363	AA381777.
HSYDF85	5685	783730	1 - 418	AF113615.
HSYDF94	5686	970789	1 - 490	AA380880, AA380894, AA372958, AA730872, AA480792, AA345665, AW075897, AW085751, AA297498, AA565338, AA147397, AA070614, AL046110, AW087557, AA330435, AA555131, A1285521, A1866422, AA551968, C14614, A1049845, AA586474, A1720671, B22196, A1338992, H48670, A1754064, A1086603, A1684335, A071173, AW173443, AC006512, AC006130, AC005392, Z81308, AL049758, AL031291, AL133448, U29462, AL008723, AL012555, AP000553, AC009516, AC006597, AP000511, AC005048, AC009263, AC002395, AL010770, AL031427, AC005081, AC007055, AC004542, Z93023, AL022316, Z95116, AC005694, AC006449, AC007358, AC015853, AL034430, AC005527, AL049757, AC005828, AL049712, Z86090, AC007358, AC015853, AL034430, AC005527, AL049757, AC005828, AF053356, AC008718, Z93783, AC004821, AL117338, AL079295, AC005736, AL031114, AC004875, AC002470, AC005280, U78027, AL132857, AC004841, AP0000201, AC004998, AC005358, AL035422, AC005033, AC004796, AC007688, AL022400, AL122020, AL031311, AP000097, AC005666, AC005297, Z97056, AC005154, AC007227, AP000240, AC005529, AC016831, AC006544, AF030876, AL139054, AC005247, AC004030, AC005180, AF196779, AL034420, AC007684, AC007845, AL020993, L78810, AC007686, AC008079, AF001550, U52112, AC016025, Z99716, AC016026, AL031659, AL023807, AC005067, AP000350, AC005395, AC006261, Z82213, AL022165, AF067844, AC003108, AL049653, AL078463, AC004019, AC005245, AC005969, AC004079, AC005209, AC002316, AB023050, AL121655, AL132987, AC003101, Z98048, AF205588, AL049874, AL096791, AL022398, AC004526, AC004651, AL022328, AC006050, AL022322, AC005291, AC004223, AC005274, AL022313, AL031432, AL035658, AC002045, AL024508, AC007637, AL121603, AC005562, AC005914, AC007731, AL133163, AC004150, AC006211, AC004983, AC008044, AL049777, Z98742, AC004854, AC004812, AC007685, AC007397, AC005102, AC005015, Z95113, AC005823, AC007541, AC035455, AL031767, AC005243, AC008282, AC007240, AC006543, Z93017, AC007253, AL021154, AP000248, AC003667, AC003007, AC007676, AC006167, AC020663, AL050321, AC004834, AL096763, AC011311, AC003962, AP000512, AC007993, AL031575,
HT2AB63	5688	518444	1 - 339	



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HT2SA18	5689	522773	1 - 430	
HT2SF05	5690	923853	1 - 534	15 - 444
HT2SF45	5691	522759	1 - 307	15 - 321
HT2SG56	5692	870913	1 - 432	15 - 446
HT2SG66	5693	522753	1 - 320	15 - 334
HT3AG28	5694	973645	1 - 225	15 - 239
HT3AH13	5695	527913	1 - 406	15 - 420
HT3BA84	5696	509190	1 - 398	15 - 412
HT3BB93	5697	530750	1 - 252	15 - 266
HT3BC30	5698	691009	1 - 327	15 - 341
HT3BF34	5699	534887	1 - 280	15 - 294
HT3BG05	5700	932557	1 - 352	15 - 366
HT3BG34	5701	527779	1 - 229	15 - 243
HT3SA07	5702	954360	1 - 315	15 - 329
HT3SB36	5703	958400	1 - 939	15 - 953
HT3SF46	5704	522600	1 - 300	15 - 314
HT3SF93	5705	791423	1 - 515	15 - 529
HT3SG30	5706	52532	1 - 353	15 - 367
HT4CF32	5707	887174	1 - 1695	15 - 1709
HT4CL83	5708	974117	1 - 476	15 - 490
HT4CM20	5709	805558	1 - 435	15 - 449
HT4FN75	5710	686279	1 - 114	15 - 128
HT4FS23	5711	952837	1 - 231	15 - 245
HT4FY06	5712	935056	1 - 73	15 - 87
HT4GF30	5713	870887	1 - 395	15 - 409
HT4GJ85	5714	909971	1 - 514	15 - 528
HT4SB45	5715	522502	1 - 385	15 - 399
HT4SE86	5716	531561	1 - 409	15 - 423
				AL135744, AC007666, UB5195, AL021938, Z68287, AC005839, AC002504, AL109827, AL035408, AC005944, AL022097, AL022336, AC008372, Z99930, AC005003, AL133371, AB000658, AC004659, and AL109628.
				N55479, AA701600, and AA249475.
				AC005137.
				AW007604, and AL021938.
				AW297280.
				AA601968.
				AA380995.
				AC004111.
				AA479273, AI831952, AI674793, AI369244, AI762813, AI498858, F25843, AA694320, R85554, T85554, R87117, R28878, and AF001548.
				AA143077, AI560342, and AC005781.
				AI347001, AI343380, AI693849, AI829933, AI394727, AA604808, AA729929, AI693841, AW293065, AA748867, AI745694, AF116509, AF116510, AF116508, AF218235, AF147782, AF175387, and Z84484.
				H50788, AW404210, AA355417, and AB018335.
				AI871007, AA773904, AI127475, AI523587, AI862655, AI830621, AW134689, AI768600, AW274750, AA142876, AI825831, AA633463, AI307774, AI916645, AA576383, AA143146, AI334590, AI867665, and AI867677.
				AA306449, Z97832, and X96705.
				AA381059, and AC005344.

HT47B12	5717	870955	1 - 263	15 - 277	AA236660, AA381041, AW001285, AB372981, AB189838, AB1719948, AB1571409, AB1597639, AB1506384, AB827059, AB356508, AW275578, AB971646, AW274489, AB863800, AB1860948, AB1568, AB311083, AB41515, AA953361, AB98787, AA701412, and AD006071.
HT5AD70	5718	960050	1 - 154	15 - 168	AA381071, AA381084, and AA380862.
HT5AH76	5719	921539	1 - 120	15 - 134	
HT5A96	5720	728624	1 - 76	15 - 90	
HT5EA69	5721	932159	1 - 475	15 - 489	B34942.
HT5EU04	5722	531203	1 - 467	15 - 481	AF017104, and AC016831.
HT5EU59	5723	739092	1 - 341	15 - 355	
HT5FD31	5724	697721	1 - 323	15 - 337	
HT5AA68	5725	733636	1 - 307	15 - 321	AA381204.
HT5AA74	5726	960479	1 - 777	15 - 791	AA167683, AA381245, AA381209, AA381208, and AC000159.
HT5AAC05	5727	932913	1 - 432	15 - 446	AA381237, AA381536, AA381939, AB381906, AA381885, HT2587, HA5806, AB183392, AA569448, AA287046, AA355128, AB96092, AA740219, AA745373, AB128881, AB1590404, RS3995, N76031, AA381687, AA767571, C16638, AW269071, AB19337, AB161090, AA363968, AW271095, AW302832, AB219590, AB284536, AB251563, AB252141, AB733946, AW021007, AB733930, AB792695, AB792746, AB792842, AB7026305, AB252190, AB792856, AA485289, AB151549, AB373861, AB090629, F09631, AA206594, AA453151, AB246061, AA486352, H68328, AB440709, AB791126, AB117895, AB054090, T65131, AB251241, AB249853, AB1884861, AB284543, AB254770, AB251944, AB251034, AB251203, AB251284, AB250552, AA598608, AA491361, AB354341, AB337805, F25640, AA814719, AA078088, T89662, AB042869, AA729004, AB381652, AA381713, F30497, AB610530, AB254781, F00211, AB297930, AA020882, AB086117, H38817, R01095, AB394790, T40550, AB878407, AB194558, AA493701, AA526673, AA295899, AB21025, AB359368, AB21314, T10218, AB491722, AB087226, AB664248, AB4780648, AB245693, AB351548, T41166, AB1031589, AB000359, AC005231, AC005346, AB121754, U07562, AB023553, AC005911, AC005781, X59875, AC005380, AC006130, AB1031666, AB099179, AC008115, AC006538, AB049540, AC004834, AC004765, AC004383, AB131939, AC005602, AC004891, AC006251, AB1033413, U63721, AB1035681, AB015416, AB1021391, AB080243, AC007052, AB022726, AC006536, AC005208, AB1035410, AC002395, U91323, AB103527, L47234, AB049713, AC004930, AC004825, AC004525, M20902, U36755, M26434, Z85987, AC010072, L29074, AC007066, AC005799, AB064861, U89335, X02883, AB1035450, AC004966, AC006121, AB1096801, AC006539, AC007934, AB101930, AC003051, AC019014, AC006137, AB1034582, AC007421, AC006141, AB1031983, AB1031650, AC003080, AC007450, Z69706, AC004778, Z73417, AB1096774, AB1035398, AC006077, AB000668, AB000608, AB1031659, AC004250, AC004804, AB1031285, AC007488, AC007226, AC005618, AC005746, U62293, AC004975, AC005057, AC002072, AB086631, AB1021367, AC005913, AC002330, AC002365, AB033012, AB1031777, AB000126,

HTAAAG63	5728	578537	1 - 447	15 - 461	AP000204, AL049843, AP000244, AC005585, AC007327, LI3304, LI3715, AC004253, Z95113, AC005566, AC007199, Z98016, AL009181, AC005399, AP001053, AC005736, Z86090, AC002553, AB010492, AC005776, AL035072, AL023375, AC007124, AL050334, AC004973, AC004808, AC006367, AC006512, AC005920, U77924, AC003109, Z82206, AC004992, AC006292, AJ003147, AL035659, AC005846, AL022396, AC002400, AC005821, AC005132, AC004126, AC006950, AC004170, AB017602, AC006017, AL050309, AL008720, AC006537, AC007370, J03071, A51133, A76958, Z83846, U73479, AC005907, AC003956, AC005369, AC002425, AF196972, Z98950, AC002477, AC007628, AP001052, AL033397, AC008124, AF11167, X51956, AC004832, AC005531, AC007371, AC005581, AC004699, AC006255, AC005210, AC006030, Z93930, AC004997, AC002404, AL034420, Z93241, AC005152, AC005856, and AC006344.
HTAAAP36	5729	629270	1 - 286	15 - 300	AA381924, AA381526, AV006162, AL150151, AW003573, AW277490, AA382744, AA676670, AA400188, AA608773, AA148109, AA913954, AA905227, AA400346, AW241479, AL654709, AL214730, AW207216, AA905243, AL554052, AL208940, AW235898, AW274535, AA569339, AL913386, AL635370, AW207054, AW161786, AP000553, and AF060862.
HTAAP96	5730	518454	1 - 223	15 - 237	AA381811, AA381271, and AA381671.
HTAAQ82	5731	952304	1 - 602	15 - 616	AA381587, AA381772, and AA381998.
HTAAU76	5732	508527	1 - 306	15 - 320	AA381744, AA381925, AL045797, and AL045505.
HTAAU78	5733	870884	1 - 117	15 - 131	AA381390, AA381725, AA319995, and AA381962.
HTAAW11	5734	961231	1 - 235	15 - 249	AA381616, AA381615, AA381569, and AA382076.
HTAAW46	5735	719422	1 - 264	15 - 278	AA381409, AA381410, AL133180, AL459866, AC006039, AC004905, AB020863, AC007680, AP000557, AC002395, AC004895, AP001053, AC005924, AC006210, AC005332, D86077, AL023575, AL159054, AL031276, and Z84719.
HTAAW81	5736	535295	1 - 295	15 - 309	AA381642, AA381664, AA381728, AA381608, and AA381961.
HTAAAY89	5737	575304	1 - 132	15 - 146	AA381991, AA381750, AA381819, and Z84474.
HTABES1	5738	960936	1 - 275	15 - 289	AA381803, and AA381336.
HTABE93	5739	509675	1 - 288	15 - 302	AA381313, and AA381844.
HTABE52	5740	535399	1 - 302	15 - 316	AA381789, AA381881, and AA381457.
HTABH72	5741	508952	1 - 315	15 - 329	AA381500, and AC004885.
HTABG03	5742	960931	1 - 327	15 - 341	AA381713, AA381652, AA381821, AA381687, AA381686, AA381597, AA381596, AA381847, AA381685, AL559282, AA578626, AA373861, AA229653, H66631, AC005838, AC002544,

					U91326, AL031589, AC003959, AC006165, AP000352, AB012721, AC006958, M90058, Z93930, Z84466, AL031663, AL031588, AC005192, Y10196, AC002542, Z95114, AF031078, and AF030876.
HTABG44	5743	508366	1 - 128	15 - 142	AA381864.
HTABG83	5744	518355	1 - 164	15 - 178	AA381660, AA381544, AA381729, and AC004242.
HTABG87	5745	940153	1 - 250	15 - 544	R01633, AA381661, AA381405, and AR044136.
HTABJ93	5746	508441	1 - 330	15 - 264	AA381933, AA381875, and AA382012.
HTABK73	5747	835945	1 - 339	15 - 353	AA381761.
HTABN17	5748	954400	1 - 334	15 - 348	AA381836, AA381752, AA381908, AA382062, AA381970, AA382016, and AA381780.
HTACL04	5749	925571	1 - 338	15 - 352	
HTACN31	5750	974314	1 - 394	15 - 408	
HTACP19	5751	975073	1 - 580	15 - 594	AL080243.
HTACP52	5752	537439	1 - 89	15 - 103	
	5753	968997	1 - 563	15 - 577	AB968466, AB002312, and AB032254.
					AA287087, AA651846, AA601230, AL253519, AA551906, AA256949, AL079769, AL925776, AA479930, AA491864, AA159046, AW402143, AA557604, AA828046, FI1809, AL745457, AA501614, N24321, AA363225, AL78972, AA904231, AA526193, AA747632, R70326, AC007934, AF190465, AC004530, AC002565, AC004837, Z93930, AC002404, AC006537, AC006112, AC005280, Z82215, AL109865, AL049795, AC007676, AC004821, AL020993, AC003046, AC003982, AC006241, AC005217, AF037222, AC005288, AC004520, AL031733, AL133163, AC011604, AC007239, AL031666, AC004953, AC006101, AC007262, AC005531, AC002470, AF053356, Z23091, AL139054, AC003044, AL021391, AL050307, AC005304, AC005702, AC005829, AC002073, AC004228, AF165926, AL035089, AC006115, AC004814, AC006160, AC005529, AC004167, Z68282, AC007298, AL031637, Z86090, AC006965, AC007551, AC004686, AC007537, AC006449, AL021154, AL117592, L7810, AC007229, AF196779, AC004000, Z92542, AC005632, AC002123, AL021331, AC000085, Z85999, AC006197, AC004638, AL033327, AC004884, AL023879, Z83844, AC007057, AL049872, Z99716, AB023049, AC005971, AC005730, AC002347, AL034411, AL035086, AL080243, AP000512, AL033397, AC006603, AC005527, AP000961, AP000704, AL035450, AL078477, AC004883, AB002312, AC005844, AC004019, AL049694, AC007151, Z93244, AC005138, AP000535, AC005486, AL035632, AC005335, AC000092, and AC005746.
HTACR92	5754	918250	1 - 295	15 - 309	
HTACS45	5755	537433	1 - 109	15 - 123	AC000159.
HTACS46	5756	537435	1 - 284	15 - 298	
HTACT29	5757	537377	1 - 301	15 - 315	
HTACU21	5758	504612	1 - 130	15 - 144	AA381989, and AL225782.
HTACU80	5759	777608	1 - 194	15 - 208	AA308896, AA299220, Z83840, AF134726, AL078644, and AC006026.

HTACW17	5760	961560	1 - 313	15 - 327	AL479338, AW193956, AW204083, AL042363, AA286986, AW135497, AL066644, AL436295, AA018355, AL333268, AW182032, AA278842, AL007168, H43862, AA761285, AW293924, AW293036, and AW250094.
	HTACY32	5761	531492	1 - 431	
	HTACY49	5762	557836	1 - 350	15 - 445
	HTAD22	5763	507146	1 - 367	15 - 364
	HTADC11	5764	965757	1 - 335	15 - 349
	HTADH05	5765	932470	1 - 116	15 - 130
	HTADH61	5766	955245	1 - 210	15 - 224
	HTADH11	5767	964944	1 - 226	15 - 240
	HTADH93	5768	870820	1 - 259	15 - 273
	HTADJ25	5769	537427	1 - 295	15 - 309
	HTADJ36	5770	773764	1 - 447	15 - 461
	HTADK40	5771	537423	1 - 447	
	HTADM61	5772	550342	1 - 460	15 - 474
	HTADQ83	5773	734996	1 - 228	
	HTADQ93	5774	537418	1 - 110	15 - 124
	HTADR41	5775	934435	1 - 347	15 - 361
	HTADW69	5776	537428	1 - 293	15 - 307
	HTAED78	5777	761591	1 - 413	15 - 427
	HTAEF32	5778	927101	1 - 579	15 - 593
	HTAEH74	5779	974303	1 - 365	15 - 379
	HTAEJ77	5780	930978	1 - 414	15 - 428
	HTAEK78	5781	773763	1 - 518	15 - 532
	HTAEL90	5782	958220	1 - 134	15 - 148
	HTAE084	5783	537374	1 - 91	15 - 105
	HTAER18	5784	577421	1 - 272	15 - 286
	HTAES82	5785	537373	1 - 342	15 - 356
	HTAET86	5786	969532	1 - 284	
	HTAEU76	5787	767963	1 - 556	
					AA533823, AA887181, R44042, AL064955, H05828, AA613954, AA654852, AB311234, AA424170, AL034399, AC004875, AC005924, AL031427, AC006343, AF111168, AC006241, AC009399, AC007277, AC005095, AL049780, AC005701, AC005552, AC005903, AL050332, AC006057, AL024508, AL031681, AC006530, AL109623, AC007207, AL050334, AL121655, AC008045, AC007014, AC007193, 293022, AL031291, AL034548, Z99716, AP000281, AP000039, AP000107, Z98884, AL109628, AC005347, AC005364, AF109718, AC005156,

HTAEV65	5788	838803	1 - 588	15 - 602	298044, AC010170, AL121603, AC005632, AC004819, AC004491, AC005323, AC007685, AL133448, AL133555, AC004987, AL031673, AC005102, AL035659, AL109963, AP000111, AP000443, AC005084, AC005606, AL009183, AL251973, AC003110, AC006367, AC008040, AC004585, AC003010, AP000501, AL022238, AL022238, AC003048, AC004589, Z85986, AC005318, AC007283, AC005061, AF165926, AC005332, AC005363, AL021808, AC001231, AC002430, Z93930, L44140, AC004699, Z84466, AL049836, AC006974, Z92547, AL050306, AC004821, AC005529, AC002468, AC004916, AF108083, AL031228, and AC005089.
HTAEV65	5789	838803	1 - 588	15 - 602	AL118881, and AA569067.
HTAEV87	5789	971526	1 - 323	15 - 337	AA381722, AA381242, and AA381829.
HTAEV95	5790	760986	1 - 449	15 - 463	
HTAEV96	5791	881092	1 - 474	15 - 488	AA381840, AA381799, and AA381872.
HTAEV96	5792	934570	1 - 417	15 - 431	AC004551.
HTAEV66	5793	868433	1 - 622	15 - 636	
HTAFC37	5794	973085	1 - 1047	15 - 1061	AI867175, AI654803, AI825698, AI633971, AI692176, AI632546, AI339492, AI003917, AA669506, AA968579, AA889250, and AI634422.
HTAFC76	5795	767976	1 - 470	15 - 484	AC005480.
HTAFD63	5796	744409	1 - 54	15 - 68	
HTAF669	5797	944409	1 - 701	15 - 715	AI962030, AL038842, AA765925, AA832444, AA664043, AL079734, AA302991, AA084609, AA581247, AA452887, AI590906, AI066646, AA493226, AI335995, AI263264, AI755202, AA736695, AI568088, AI357823, AI955029, AI749527, AW328000, AC006312, AL121595, AL031848, Z98200, AC007263, AP000501, AF111168, AC006512, AL035587, AC002375, AC005952, AC004150, U91322, AL049712, AL133353, Z98051, AC004975, AC009784, AC002115, AC005004, Z93930, AL133244, AL080243, AC004821, AC006121, AC005412, AF134726, AF031078, Z93923, AC005527, AC004895, AC005255, AC008115, AC006468, AP000552, Z94721, AF030876, AC004891, AL049776, AC005702, AP000511, Z93331, AC005102, AL096794, Z85987, AC004967, AC004745, AC005920, AC005736, AC004354, AC006380, AP000502, AC007011, AP000030, AC005971, AC004851, AC008583, AL021707, AC005197, AC006480, AC005049, AC004813, M89651, AP000212, AP000134, AC004913, AC005529, AL031680, Z97353, AC007225, AB023051, AL096791, U91326, AL021391, AC004859, AL109847, AC005513, U95742, AC005914, AC005089, Z98036, AP000362, AC007686, AL031767, AL031311, AL035461, AL008715, AF196970, AC005071, AC005784, AC006043, AL049839, U85195, AP000031, AC000134, AC006277, AC005082, AL031602, AC005288, Z98884, AL049829, AC002350, Z75389, AL021878, AC005081, AF000658, AC007376, AC004797, AC005829, AC005028, AC006966, AC002301, AP000692, Z83826, AC006211, AC005924, AP000557, AC007731, Z94160, AC005500, AC002116, AC007193, AC006952, AP000512, AB017602, AL035071, Z85996, AL033525, Z83840, AC0060511.

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HTAF90	5798	787604	1 - 369	15 - 383	R20183, AA485189, F06553, and AB030181.
HTAF11	5799	933028	1 - 325	15 - 339	AA381467, Z92927, and Z55213.
HTAF76	5800	767968	1 - 379	15 - 393	
HTAF52	5801	974338	1 - 709	15 - 723	
HTAF58	5802	870854	1 - 531	15 - 545	
					AW007759, H73550, AA584489, AA720702, AA644090, AL064864, AA847508, AW151541, AL017251, AA847427, AL446464, AL037910, AA702539, AA702080, AA608520, AA664604, AL061313, H93293, AW302709, AA555229, AA338234, AL040051, AA533281, AA629540, AL205181, AL537955, T05834, AL031759, AL038842, AL079869, F23327, AH7595, H63660, AL491867, AL004591, AA634786, W79504, AA523843, AA579427, AL095197, AA571331, AW238127, AA720582, AL045077, W169038, AW438616, AL689385, AA452924, AL031228, AC005274, AL035458, AL035450, AC005358, AC021092, AC004242, AC005666, AF111168, AP001053, AL031005, AC005940, AL031668, AL135745, AC009247, AL034420, AC004895, AF053356, AL000092, AC003755, AL049697, AC004963, AC005971, AC008123, Z98051, AC003681, AL000115, AC007406, AL009984, AC004686, AL133448, AL031295, AC005921, AL003147, AL049636, AF001530, AC005300, AF045555, AC005670, AL008735, AC005982, AL096701, AL078463, AC007308, AC004887, AC003083, AL049795, AF134726, AP000557, AC005703, AC005200, AC004472, AC005288, AC006213, AC006393, AL078611, AF217403, AL021808, AC004263, AC005969, AP000338, AC006960, Z82215, AC005083, AC008249, U95742, AF107885, AP000216, AC006050, AC006057, AC007102, Z93241, AF047825, AC007685, AL031311, AC007114, AL035423, AC002312, AC007182, Z84479, AC005828, AC005519, Z83840, AL022315, AC002126, AC002429, AC005209, AC005740, AC005244, AL075881, AC005774, AP000252, AC007226, AL078476, AL050338, AL022322, AC005086, AL009031, AC003682, AC006241, AC016830, U91327, AC002425, AC006273, Z93017, AL096791, AL110502, AC002585, AL049757, AC000379, AC005180, U95743, AC004765, AC005324, AC006515, AC007216, AL031053, AL022476, AF029308, AC007666, AL049843, AL031429, U89337, AC005154, AC005859, AC007676, AC000090, AC007666, AL049843, AF039907, AC006023, AB001523, AC006430, AP000354, AC000041, AC005484, AC006039, AP000962, AL080241, AL049712, AL049772, AC007193, AL031584, AP000512, U85195, AC005320, AC008044, AC005535, AC005527, AC002326, AC007227, AL121603, AC004837, AC005015, AC008404, U15422, AC003692, AC006071, Z84469, AC003086, AC005412, AC005195, AC007214, AF000658, AL031432, AC004388, AC004883, Z84488, AC005482, AP000031, AC002470, AC005695, AC006195, AC000025, AC000052, Z89705, AP000152, AC006449,

					AL035494, AC007686, AL031283, AF129756, AL035249, U62317, AF091512, AL021807, AL022163, AC005907, AC004019, AC004754, AC006539, AF165926, AF227510, Z83846, AL031347, AC007041, AL080243, AC005242, AP000044, AP000112, Z84484, AC005821, AC004228, AL050318, AC005991, AC005913, AP000356, AL139054, AC004646, AC006607, AC008071, AL049760, AC012627, AL035420, AL135783, AC010722, AC009191, AC005231, AL117354, AC006128, AL022318, AP000502, AC006958, AL022327, AC009516, AC007376, AC007160, AC009501, AL109827, AC005783, AC004099, AC007228, AC007731, AP000355, AC003111, AC007707, AC005500, AL030996, AC004797, AC003101, AP000359, AC002981, AC005212, AC002310, AL031133, AC005187, and AP000511.
HTAGA71	5803	870853	1-292	15-306	
HTAGB89	5804	974060	1-392	15-406	
HTAGC91	5805	963125	1-386	15-400	AL041135, AB023229, and AJ236382.
HTAGD29	5806	925699	1-418	15-432	
HTAGE53	5807	936117	1-193	15-207	
HTAGL61	5808	963182	1-524	15-538	AW299622, AA031204, H92418, and AC004849.
HTAGN04	5809	926501	1-620	15-634	R02305.
HTAGV46	5810	847777	1-564	15-578	
HTAGV49	5811	836078	1-507	15-521	AW070228, and AA669099.
HTAGZ11	5812	965867	1-459	15-473	AC006101, AP003026, AC004966, Z93930, AL035684, AL133163, AB013139, AC004815, AF047825, AC004612, AC004832, AL049776, AF069291, AC002551, Z86090, and AF049895.
HTAHH17	5813	860919	1-324	15-338	AA381758.
HTAHL49	5814	934013	1-490	15-504	
HTAHLK12	5815	920332	1-544	15-558	
HTAHL28	5816	974030	1-399	15-413	
HTAHL45	5817	908949	1-649	15-663	R35096, RI7249, D58283, D59502, D80195, D59775, C14389, C14331, D51423, D80038, D81026, D59467, D80164, D80227, D59839, D80022, D80253, D80166, D59619, D80210, D51799, D80391, D80240, D80043, C15076, D59787, D81030, AA305578, D80269, D51022, D80522, D50979, D80212, D80193, D80196, D80188, D59610, D80045, D80219, D59889, AA514188, D59927, D57483, C14014, D80378, D80366, AA305409, D80024, D50995, D80248, C14429, AW177440, AA514186, AW360811, D80241, D80251, D80133, D51060, AW178893, D80302, AW375405, D80268, T03269, AW377671, AW179328, AW366296, AW360844, AW360817, C75259, AW375406, D80439, AW378534, AW179932, AW377672, AW179023, AW178905, D80247, AW178906, AW177501, AW177511, AW378532, C05695, AW352171, AW352170, AW377676, D51103, D80132, AW177731, AW178907, AW178762, AW179019, AW179024, D58253, D59373, D80134, D51250, AW177505, AW360841, AW179020, AW178775, AW178909, AW177456, AW179329, AW369651, AW178980, AW177733.



HTAHL76	5818	974300	1 - 470	15 - 484	<p>AW378528, AW178908, AW178754, AW179018, AW352158, AW352117, D80157, AW367967, AW176467, A84916, A8028859, A1132110, A62300, A62298, AR018138, AR008278, AF058696, A82595, X67155, Y17188, D26022, Y12724, A25909, A67220, D89785, A78862, D34614, A94955, AR060385, AB002449, D88547, AR008443, I82448, X82626, I50126, AR016808, I50132, I50128, I50133, AR066488, AR016514, AR025207, AR060138, A45456, A26615, AR052274, Y09669, A43192, A43190, AR038669, AR066490, AR066487, I14842, A30438, I18367, AR054175, D50010, Y17187, A63261, AB012117, AR008277, AR008281, AR008408, X64588, AR062872, A70867, X68127, AR016691, AR016690, I79511, I46128, A83596, D13509, D88507, AR066482, A44171, A61136, A68321, AR060133, A85477, I19525, A86792, X93349, AR060382, U79457, AF123263, AR032065, and AR008382.</p> <p>AW002350, AA428792, AW303008, AA602047, AW021627, AA730422, A1630283, AA297734, AW021583, A1D49849, AA476397, A1590485, A1217936, T92271, AA236903, A1868384, C18521, A1932598, C18840, A1937125, AA092571, AA890425, AA526316, AA487621, AA715090, A1554738, AA488746, A1037052, H84675, A1564454, A1368256, A1635819, A0683238, AA831700, A1123396, A1370104, AA384733, AA483108, AA297769, A1045808, A1046156, A1819140, AA854993, A1525319, AW276835, A1036251, AA487417, AW068896, A1224093, AA719292, A1038473, A1754271, A5388001, A1755164, N64259, AW276748, AA564570, AA812141, A1088768, A1047429, N35602, AW177003, A1629872, A1149313, A1924872, A1890324, A1434686, A1037554, A5700230, AA866559, AA286669, A1040266, A4018283, A1766906, A1633479, AA431949, A1051457, A1828710, A1022608, AA370455, A434186, A1249473, AW302950, A1138182, AW084445, AC005375, AC006930, AC005225, AC004234, A1049829, AC004087, A1022237, AC004675, AB002390, AC006537, A1030995, AC004150, A111168, AF088219, Z97352, Z85987, Z83843, AC005730, AC007637, AP000700, U44395, AC004808, A1133245, AC002365, L44140, Z82206, A1023877, AC006019, AC004916, AC004327, U95740, AC000379, A1031602, AC000117, A117258, U67221, AC002120, Z54072, AC004149, Z93023, A1078477, A1008633, A1031295, Z97987, Z84488, AC005598, A1223364, AC004778, A1023882, U51561, AC005568, AC004257, U07562, AF017732, AC007360, AC006004, A1034451, A1049539, AP000345, AC004933, A1132712, AC004386, A1808043, U95743, AC005703, A1078638, A1021368, A1031259, AC005395, A1133249, AC005284, AC005291, AC005046, AP000253, AC007191, AC003086, AC006354, AC007685, AC0060459, AF017885, AC002538, A1042836, AC006996, AC004755, U07563, AC011718, AP000126, AP000204, AC002124, A1032330, Z83841, AC008044, Z84466, AC004253, AP000244, AP007934, AC002109, A1133500, U50429, AC008076, AF038458, AC005911, AF155238, A1008631, AC004098, AC006518, AC007564, U47924, AF009660, AC004855, AC005183, AC006599, A1023578, AF015416, A109827, A1031659, AF003962, A1035587, AC002477, A1033521, A1050325, AC004953, A1034548, A1034549, AC006987, Z98950, AC008249, U91322, A1049837, Z00017, A1078621, A1035069, Z54334, Z68289, AC004034, A1031393,</p>
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HTAHN29	5819	923115	1 - 252	15 - 766	
HTAHQ22	5820	870831	1 - 275	15 - 289	
HTAHQ94	5821	839505	1 - 506	15 - 520	
HTAHR03	5822	922772	1 - 417	15 - 431	
HTAHR06	5823	934062	1 - 451	15 - 465	
HTAHS10	5824	963183	1 - 415	15 - 429	
HTAHS21	5825	960795	1 - 503	15 - 517	
HTAHV04	5826	926747	1 - 435	15 - 449	AA381575, and AC002528.
					AL572619, AL1814836, AL6861747, AW167851, AL202106, H86259, H85857, AA059020, AL096537, and AC005757.
HTAIB11	5827	965835	1 - 246	15 - 260	
HTAIC05	5828	930951	1 - 806	15 - 820	W87576, AA694098, W87434, AL056858, AA676994, AA677352, R16832, AC006312, AF165926, and AJ006997.
					AA381501.
HTAID04	5829	926541	1 - 389	15 - 403	
HTAIF70	5830	974062	1 - 476	15 - 490	
HTAIF78	5831	870785	1 - 727	15 - 741	AA251602, and AA381714.
HTAIK75	5832	870815	1 - 458	15 - 472	
HTAIQ39	5833	921729	1 - 418	15 - 432	
HTAIQ75	5834	870804	1 - 401	15 - 415	AC002400.
HTAIR54	5835	870814	1 - 712	15 - 726	H67194, and H67182.
HTAIR80	5836	968234	1 - 448	15 - 462	AC006372.
HTAIV79	5837	870874	1 - 503	15 - 519	
HTAIG31	5838	926731	1 - 439	15 - 453	
HTAIG65	5839	975260	1 - 452	15 - 466	
HTAIJ01	5840	914899	1 - 244	15 - 258	
HTAIN08	5841	958057	1 - 146	15 - 160	R46278, R74243, and AA203640.
HTAIR30	5842	975309	1 - 484	15 - 498	D51221, D59467, AA305578, AA809122, T11417, D59317, D50979, D60010, D59551, D80164,

			C06015, C15076, D59275, D80258, D81026, D80269, D80195, D59503, D80045, D80038, D80227, D59502, A1553686, D51022, A1552527, F13647, D58283, C14389, D80043, H67854, H67866, D80024, D800378, D800439, D58246, D81030, D80188, D80251, A1552923, D57483, C03092, D80157, D59859, D80022, C14331, D80014, D80166, D80212, D80268, D80362, D59889, C14973, D81111, D80196, D51423, D59619, D80133, D80247, C14227, D80366, D80210, D51799, D80391, D80240, D80253, D80219, D59787, D80064, D50995, AA305409, C14014, C05763, D59474, D80522, D51103, D80248, D80241, D59610, D80193, AA514188, A1525235, D59927, A1525920, C14046, C14344, C14407, D45273, AA514186, A1525917, D59627, D58101, A1525242, D52291, D80168, D45260, C16955, T03116, Z21582, C05695, A1525927, Z23452, T02974, A1525925, A1525237, A1557774, D31458, D51053, T02868, AA514184, A1552538, A1525925, A1525215, C13958, D59695, C14298, D51213, A1525903, A1525216, A1552528, AW369631, Z30160, A1525222, T03048, H67858, A1535961, A1525969, AB002449, I14842, AR2595, AC2300, AR008278, AR054175, AR008277, AR008281, AR018138, AF058696, I79511, AR016808, I82448, AR060382, AG3887, XG7155, AK016691, AR016690, and U46128.		
HTBA095	5843	715044	1-466	15-480	AA382185, AF137030, and AF137031.
HTDCA37	5844	870742	1-395	15-409	D29028.
HTDAAC77	5845	575842	1-458	15-452	N95037, A102247A, A1248271, AA975181, AJ149108, A093311, A1209125, AW090147, A1563932, AA464704, AA838260, A817984, N66677, AB72916, AA194950, A1613488, AA988360, AW009662, AW197169, N70667, A1139484, AA593023, A291223, AA918512, A192601, A1W275959, A1207031, A1417360, A123112, A1W168560, AA838742, A1700254, A167736, AA025125, A1127821, A1199468, A1678965, AA706984, A142366, AA648206, A1290254, AA705483, A1195162, A148016, AA662480, W94302, W91125, AA535223, AA649121, Z19423, A1887125, C00301, AA423808, A1624775, AA71770, H96745, AW021909, AA653395, AA808520, A1264085, R06999, AA419007, A1636591, H30176, AA203331, AA203130, A13711762, F37305, AA075205, Z25040, A1050096, and AF083255.
HTDAE43	5848	889311	1-466	15-480	AA437890, AA454042, A291948, AV237540, N91112, A1494473, A1911509, A1493197, AA343020, T82251, T80658, A1652561, A1952736, A4478908, AC005613, AL049875, AC003318, A1132800, AC005406, AC007996, AC004024, A1022727, AC007283, AB026899, AP000500, U63960, AC006313, Z83827, AC004817, AC006017, AL022401, AC004072, A1133321, AC008040, AC007068, D84394, A1J21576, AP005059, AC006048, AC005296, AC002464, AL096801, AC003685, AJ003147, Z73965, AC006023, AC005598, AL023581, AC006371, AP000303, AC006001, N19364, AB002059, A22491, AC004273, AC007664, AC004869, AC006040, AF114156, K70420, AP004476, A1033403, AC004205

HTDAF65	5849	927842	1 - 805	15 - 819	AC004210, AC008173, and AC007690.
HTDAF66	5850	975317	1 - 531	15 - 545	AA809786.
HTDAF67	5851	576013	1 - 168	15 - 182	AW450512.
HTDAF68	5852	574100	1 - 581	15 - 595	AA081775, and AL034553.
HTDAF69	5853	935798	1 - 313	15 - 327	AC004242.
HTDAF70	5854	682040	1 - 268	15 - 282	
HTDAF71	5855	578797	1 - 286	15 - 300	
HTDAF72	5856	578804	1 - 377	15 - 391	
HTDAF73	5857	876650	1 - 556	15 - 570	AA306797, AA315885, AA278590, and Z56144.
HTDAF74	5858	664270	1 - 285	15 - 299	AL109758.
HTDAF75	5859	574681	1 - 287	15 - 301	
HTDAF76	5860	835534	1 - 446	15 - 460	AA669142, and Z82206.
HTDAF77	5861	791508	1 - 304	15 - 318	
HTDAF78	5862	870798	1 - 616	15 - 630	R86892, AA628423, R41612, AL070842, AL055957, H05210, AA991859, AA470669, AA001858, AA031622, AL0609279, AA974128, AL434212, AL244762, AL093589, AW169863, AA975419, AL800762, AA659915, N62291, AA044282, AL342963, AA026158, AA994340, AL375034, AA099832, AA149174, AL608984, R64147, R64156, AA136703, R65842, H86821, H87284, AL302922, AA031703, AL631329, AL824240, H83826, AL801241, W57570, AA149173, AA026157, AL744430, AA777668, and AC004549.
HTGAW37	5863	752829	1 - 402	15 - 416	
HTGAW38	5864	572404	1 - 410	15 - 424	
HTGAW39	5865	782877	1 - 587	15 - 601	H93152, H75866, AL057455, AA483942, AL432270, AL031687, AL049729, and AC006141.
HTGAW40	5866	923716	1 - 306	15 - 320	
HTGAW41	5867	775299	1 - 359	15 - 373	
HTGAW42	5868	870414	1 - 332	15 - 346	
HTGAW43	5869	584717	1 - 459	15 - 473	
HTGAW44	5870	685648	1 - 320	15 - 334	H52047, and AA354013.
HTGAW45	5871	954599	1 - 633	15 - 647	AL476793, AL672290, AW138734, AA770654, AA879458, AL681663, AL697960, AL914080, AL809954, AA830773, AL689893, AA829778, AA427944, AA430133, AL292003, AW006004, AL802022, AL830817, AA760755, AA911826, AL972329, AW024985, AL218238, AL262623, AL147166, AA775096, AL307175, AA432096, AL183733, AW135791, AL291999, AL262623, AL468220, AL261474, AL680656, AW303999, AL697519, AL932284, AL932319, AL301269, AW015392, AL351005, AL459293, AA057484, AL78943, AL264521, AL146596, AW131688, R94942, AL084799, AA434562, AL798178, AW207495, AL796893, AL144302, AL418524, AL690206, AL810352, AW136151, AL927475, W23511, AL912757, AA807192, AA906625,

HTGBF16	5872	572499	1 - 435	15 - 449	AW242625, AI277736, AA862266, and AI907920.
HTGBF62	5873	753962	1 - 286	15 - 300	T85954, T86652, and T85542.
					AA742198, AA116064, AA988320, AA478355, AA666332, F08230, AA547947, AL043285, AL310787, H86279, AA021199, AL046549, AA063419, H38353, AA326372, AA931974, H46830, AW080777, AA199578, AI310670, AA648942, AW438856, AA493975, AI754926, AW277253, AA455482, AA402129, AI311249, AA477503, AI344948, AA070345, AC006333, AC005562, AL022725, AC004825, AC004808, AC004999, AC004662, AL022574, AC006487, AL023807, U82828, AL021808, AC004805, AC005015, AL135783, AL133244, AF029308, AL109628, AC005405, AC006529, AC004167, AC008038, AC007666, AC009181, AL031281, AC006004, AC005049, AC005187, AC006111, AC010582, AC004686, AL133246, AL047994, AF049895, AC007250, AP000152, AP000011, AC005548, AC005158, AC007395, AC005682, AC004125, AC006251, AB023048, AF139813, AC007878, AC004456, AL033375, AL049844, AC007993, AC005330, AL022238, AC006370, AC005245, AC005067, AC002430, AC007384, AC004065, AC004815, AL049563, AC006071, AC004966, AP001058, AL031577, AL050343, AC005332, AC000159, AL008708, AC005701, AC005013, AL139054, AC004000, AC007179, AF1029907, AC002558, AC007537, AL031123, AC005738, AL035423, AC005725, AL031780, AF109907, AC000025, AC004984, AC004858, AC004098, AL024474, AL049869, AF165926, AC002094, AC005914, U95742, AC006285, AL034400, Z84488, AC005772, U91326, AL133445, AP000086, AL132987, U80017, AL034418, AL133249, AL031311, AC006945, AC006441, Z82201.
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HTGBF90	5874	786611	1 - 359	15 - 373	AA806299, AA829999, AA831691, AA321371, and AL096808.
HTGBF95	5875	966903	1 - 373	15 - 387	AA925782.
HTGBH18	5876	579103	1 - 344	15 - 358	
HTGBH55	5877	735751	1 - 583	15 - 597	I28792.
HTGBI93	5878	787110	1 - 207	15 - 221	AC003663, AC003070, AL022726, AC005104, and AC006251.
HTGBJ55	5879	579005	1 - 398	15 - 412	AI132917, AF158180, AF031075, AF031078, and AF030876.
HTGBK66	5880	772325	1 - 327	15 - 341	
HTGBL34	5881	572643	1 - 308	15 - 322	AA361858.

HTGBL72	5882	576641	1 - 357	15 - 371	
HTGBN09	5883	506500	1 - 335	15 - 349	
HTGBN27	5884	683557	1 - 208	15 - 222	
HTGBN57	5885	578806	1 - 257	15 - 271	
HTGBP65	5886	870406	1 - 227	15 - 241	
HTGBR20	5887	669797	1 - 609	15 - 623	
HTGBR93	5888	973978	1 - 635	15 - 649	
Z84479					
AW408268					
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HTGBS02	5889	970445	1 - 355	15 - 369	D88507, D13309, AR060133, I79511, AF123263, X72378, AR032065, AJ000347, X93535, and AR008382.
HTGBY51	5890	506502	1 - 263	15 - 277	
HTGCD10	5891	964884	1 - 275	15 - 289	
HTGCD85	5892	579028	1 - 313	15 - 327	AI469599, AC005682, AL049760, AC005484, AP000475, AL121652, AC005777, AC006530, AC004520, AP000269, AF029308, AP000103, Z83840, AL050317, AC005015, AL109758, AC006052, AP000049, AC005996, AP000311, AC005318, AC007308, AC005901, and AL121595.
HTGCF49	5893	723090	1 - 545	15 - 559	AI017212, AL042735, AB018295, and AF15097.
HTGCG89	5894	894005	1 - 413	15 - 427	
HTGCH58	5895	909849	1 - 1259	15 - 1273	AA746372, AW293387, AA804512, AL124624, N29013, AW082724, AA737473, AL018013, AW298470, AL004868, AL348442, AA776579, AW298354, AA748461, N20641, AL280305, AA923469, R50142, AA837153, AA921954, AA827804, and Z60950.
HTGCI80	5896	588166	1 - 474	15 - 488	H53442, and AA249120.
HTGCI54	5897	571389	1 - 502	15 - 516	
HTGCL06	5898	915789	1 - 367	15 - 381	AL040359.
HTGCL40	5899	578774	1 - 225	15 - 239	
HTGCL94	5900	747573	1 - 242	15 - 256	
HTGCM13	5901	913673	1 - 326	15 - 340	
HTGCM90	5902	678122	1 - 472	15 - 486	
HTGCM92	5903	578768	1 - 296	15 - 310	Z85986.
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HTGCF76	5904	770143	1 - 299	15 - 313	AA350028, AI561255, AA654998, AL007788, AL042420, AA356424, AW440810, AA747480, AA747276, T07778, AL080274, AL031666, AL096701, AC008064, AL049874, Z84474, AP055066, AC005765, AC005237, AC007955, AL080243, AL049832, Z75894, Z75895, AP000056, AP000171, AP000124, AC005004, AP000330, AC005412, AL022322, AC007130, AL031289, AL009179, AC005940, AC002418, AC005258, U38670, U38668, AL031255, AC006071, AC012599, AC004966, AL133485, AC000353, AC004386, and AC004821.
HTGCO15	5905	880293	1 - 377	15 - 391	
HTGCO19	5906	974433	1 - 491	15 - 505	

HTGC520	5907	933260	1 - 520	15 - 534		
HTGC581	5908	921650	1 - 232	15 - 246		AT754576, AW195474, AA846702, and AC004889.
HTGCT54	5909	960912	1 - 291	15 - 305		AA459192, R08444, T85364, T84409, and AA361578.
HTGCT57	5910	496297	1 - 380	15 - 394		AA0495163.
HTGCU25	5911	679403	1 - 267	15 - 281		
HTGCU28	5912	713353	1 - 242	15 - 256		
HTGDG28	5913	735002	1 - 397	15 - 411		
HTGDG63	5914	579127	1 - 392	15 - 406		
HTGDG70	5915	757191	1 - 395	15 - 409		
HTGDG75	5916	769010	1 - 135	15 - 149		
HTGDM56	5917	733405	1 - 404	15 - 418		AL049758.
HTGDM65	5918	967158	1 - 426	15 - 440		AL020997.
HTGDS63	5919	958651	1 - 363	15 - 377		
HTGDS88	5920	659766	1 - 550	15 - 564		
HTGD191	5921	974962	1 - 626	15 - 640		
						AW375405, AA305409, AW177440, D80439, AW360811, AW366296, AW375406, AW179328, T03269, C14389, T38593, AW378534, AW179004, AW179332, D58283, AW179329, AW377672, AW179023, AW178905, D59859, D80022, C14331, D80166, AW177731, D80195, D80193, D59927, D59467, D51423, D59619, D80247, AW378528, D80210, AW178906, D51799, D80391, D80164, D59275, AW178762, D80240, D80253, D80043, D59787, D80227, D59502, AW378532, D80038, AW179019, AA305578, AW377676, AW352170, D45260, C06015, AW378533, A1525913, I50126, I50132, I50128, I50133, AR066488, X82626, AR025207, A84916, A45456, A67220, D89785, A62300, A62298, Y17188, AB028859, A82595, A78862, D34614, A4995, D56022, D88547, A132110, AR018138, AR082878, X67155, Y12724, AF038696, A25909, AR016514, D50010, AR060138, A28615, AR052274, AR008443, Y09669, AR060385, AB002449, AR066487, A43192, A43190, AR038669, A30438, D13509, AR060133, Y17187, AR008408, A63261, A70867, AR016691, AR016690, and U46128.
						AC004242.
HTGDU57	5922	712249	1 - 568	15 - 582		
HTGDY50	5923	708605	1 - 521	15 - 535		
HTGDW16	5924	661477	1 - 521	15 - 535		T90228, N59530, AL049869, AF031076, AF030876, AP000347, AC002167, Z49154, AC006128, AF107885, ZB5986, AL049793, and AP003346.
HTGDW40	5925	710759	1 - 580	15 - 594		
HTGDW96	5926	967030	1 - 1682	15 - 1696		A1354538, A1185915, AA902656, AA928143, A1697438, A1091263, A1129948, AW182996, AA205969, A432383, A130757, A1686707, A246246, AA610132, A1095234, AA602547, A140088, AA992399, A1284151, AA946670, AA775430, H15150, A1081207, A1093901, AA955934, AA827098, AA706205, A1347104, A1369270, N70255, AW024457, A1140633, A1085317, AA909079, A1275007, A1025475, AA905290, A1379266, AA010063, AA872686,



AA948272, AI140772, AI266084, AI352580, AW081421, W04189, N69287, AI436354, AA501433, AA494361, N49879, AA827088, AI724446, AA832464, H56506, AI358609, R43705, HI5210, H84120, H84119, AA694028, AA375219, RI5221, AI907126, AI003836, AA336964, AA516079, W28121, R20249, AA41638, AA206267, H09794, N34884, AI85667, AI934031, AA721176, AI094546, Z40832, AA353931, AI919536, AI382838, AI934162, AA035556, N49984, AA035045, AI572357, AI907128, AI907125, AW393494, AI340087, AW393499, AW301505, AW268302, AI349772, N94107, AI345587, AI345551, AI270183, AW079572, AI036403, AW268122, AI225989, AI698391, AI251963, AI336582, AI815855, AI684021, F37471, AI251221, AI564259, AI404243, AW072719, F27788, AI042745, AI45557, AI079963, AI318280, AW149925, AW268221, AI801325, AI672913, AI866090, AI042628, AI252023, AI251594, AI269862, AI635492, AI358701, AW051258, AI364738, AI537677, AW161579, AI582932, AI812015, AW118518, AW150578, AI045266, AI120853, AI036631, AW198075, AI570807, AI036361, AI041772, AI802542, AW160916, AI889189, AA449768, AI525653, AI950892, AI039086, AI798456, AI037582, AI037602, AI121501, AW192687, AI525653, AI950892, AI564719, AI591420, AI932794, AW162194, AI036638, AI611738, AI619502, AI677796, AI045500, AI184903, AI491852, AI040241, AW026882, AW151136, AI923370, AI567940, AI929108, AI686906, AA291456, AW051088, AA433157, AI288305, AI702073, AI824576, AI452560, AI889376, AI475371, AW080746, AI524671, AI921248, AW080402, AI632408, AI478123, AI433976, AI633125, AI635067, AI567769, AI620284, AI915291, AI913452, AI950664, N80094, AI554821, AI045774, AI042627, AI539771, AI688872, AI521012, AI500659, AI815232, AI648663, AI500523, AI119863, AI624548, AI520809, AW117746, AI284517, AI036901, AI500706, AI494201, AI491776, AI445237, AW151138, AI110306, AI926790, AW087445, AI538342, AI521560, AI500662, AI284509, AI889168, AI866573, AI633493, AI434266, AI445392, AW020693, AI554245, AI440252, AA225339, AI306613, AI433303, AI174394, AI627988, AI909697, AI281772, AA640779, I48979, I48978, AF113694, I89947, AI050773, AF113019, AF090934, Y11587, AF090901, AI117457, AF177401, A08910, A08909, A08913, AI050393, AF111851, AI133560, U35846, AF113690, AF090903, A08916, S78214, AF067728, AI122050, AF183393, AI133072, AI049283, AF087943, AI515205, Z82022, AF090900, AI050149, AI096744, AF146568, AF078844, I89931, AI133016, AF057300, AF057299, Y16645, AI137550, I49625, AI122049, AF097996, U67958, I33392, AF113699, I31396, S88736, I31397, X84990, AI110380, A65341, A77033, A77035, AF111849, AF07152, AI117435, AI122121, AF106862, X72889, AI137677, AI137557, A03736, AI049314, E07108, AI133075, AF125949, U42766, AI133104, X70685, AI110196, AI133080, AI133640, AI137271, AI137538, AI122098, AI122110, AF071437, A93350, AI050116, AF158248, AI050138, AF118070, Y11254, AJ242859, AI133557, AF026816, AI137521, A58524, A58523, X82434, A5000937, AR000496, U39656, AF090896, AI2297, AI110222, AF090943, AI137569, AF115691,				
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HTGD29	5927	883517	1 - 450	15 - 464	AL110221, AF125948, AL137463, AF118064, AL049938, AL049430, AL080137, AL117594, AL080124, AL012755, AR011880, AF091084, AF113013, Y09972, AL122093, AL133113, AF111112, AF104032, AL133066, AF118094, AL133093, AL050024, AL050172, AL117583, A08912, AL133565, AF079763, U91329, AF119337, AL049466, E07361, AL080159, E02349, AL117460, AL137533, AL050146, AL133014, AL049382, AL137459, AL117585, AF026124, AL050108, U80742, AB019565, AL080060, AL110225, X65873, E15569, I42402, A0238278, X63574, I03321, E03348, AL049452, AF113689, U00763, E05832, AL133665, AR059958, AL133077, AL133568, X93495, AL122123, AF113676, AL137292, Z37987, I09360, U72620, AR038854, AL049464, AF185576, AL137537, I26207, X06540, AL137476, Y14314, AF061943, U58996, AL137648, AL080127, I00734, AL137480, E08263, E08264, E00617, E00717, E00778, AL117440, S61953, AL137556, AF106657, AF003737, E06743, AF162270, AF079763, X98834, AL133067, AF126247, A45787, AF084339, AR038969, E04233, AF162270, AF079763, X98834, A07647, AR020905, AL080074, Z72491, A93016, AL110197, AF090886, AL137526, AF081197, AF106827, AF210052, AL137429, A006417, AL023657, L30117, Y07905, U49908, M30514, AL133098, AL122118, AR013797, AL137283, X87582, AF061795, AF151685, AF061790, AL137488, AR034830, I96214, A90832, E08631, U68387, U78525, AF139986, AF061573, AF081195, AF100931, AL137478, AL137523, E02221, D83032, Y10080, E12747, L19437, and AA778772.
HTGB95	5928	725254	1 - 383	15 - 397	AL1793116, AL1793143, A976208, AL703191, AL733188, AL733210, AA210747, AA367325, AA478680, AF048086, and A006068.
HTGED32	5929	698776	1 - 760	15 - 774	H62923, AL434096, AA550959, AA302110, AA984920, AA564925, AL022476, AF111168, X90927, X90926, M33388, X58467, X58468, AC008273, AP000556, AP000557, AP000553, AC007899, AC002040, AL049839, AC005089, AC002369, AC004659, AC007666, AC009501, AL049631, AC007227, AL021878, Z98946, AC002470, AC005343, Z93023, AC002994, AL023803, AL034423, AC004674, AL022336, AL031767, AL121769, AL049760, AL031311, AL050307, AP000884, AC006160, AC007055, AL021977, AC008154, AC007065, AC006251, AC010205, AC004953, AF187320, AC005512, AC005049, AL022326, AC005695, Z95114, AC005777, AP000514, AL021578, AC005747, AC007686, AP000096, AC000240, AC009247, AL109963, AP000694, Z97958, AC007371, Z98742, AL022323, AC000091, Z74739, AC009247, AL035661, U91323, AC005383, AC001875, AC005971, AL031388, AC005940, AP000952, AL096701, AC002400, AC006312, AC004841, AB023051, AC005102, AC005535, AL035403, AL031432, AC004804, and AC004821.
HTGED54	5930	729223	1 - 449	15 - 463	AA301680, AL19419, AA694596, H96248, AA720331, AL640717, AA825809, AA639040, AA947352, H68210, AL520925, AA225495, AA056619, AA363890, T99365, R00693, AA084320, AA129188, AA340581, AA218684, AA745507, AA862243, A002950, AA835702, A1560241,
HTGED59	5931	711417	1 - 327	15 - 341	

					H05066, N26159, AA171400, H24331, AW338376, AI890297, H23238, AA211925, AI690520, N71264, AI926126, AW085626, H97551, AA484671, AA744172, AW022796, AA744278, AA601343, AI805699, T26553, AA598579, AA772493, N24013, AA730530, AA526339, AA602579, AA372646, T57615, AA262079, AI623305, U69568, AC007011, AC005083, AC005409, AC003041, L78833, AC005534, AC005225, AL031666, AL050341, AC004067, AC008123, AC003379, AC005800, AP000958, AC002312, U85195, AE000658, AC007066, AC004810, AC004525, Z95703, Z73495, AC004168, AF111168, AC004816, AC005324, AC006474, AC006475, AF064859, AP000349, AC007013, Z97876, AL078462, AL035453, AL035884, AL078476, AC007050, AC002369, AC002302, AL034420, Z93928, AC005913, AC004584, AC006039, AL020997, AC006966, AL135960, AL131016, AC004941, AC002070, AC002991, Z93023, AC004196, AF207550, AC007695, AC007541, AL022146, AC007934, AC004634, AC005049, Z82201, AC005527, AC005512, AC006011, AC005041, AC005914, AC008119, AC008115, Z82249, AC004531, AF113129, AL080243, AL139054, AC003014, AC004543, AC005082, AC006071, AC002038, AL008639, AC007542, AC007877, AL031286, Z95114, AF217403, AC005539, AL049821, AC002524, Z98946, AC005696, AC000052, AC004019, AC005372, AC005529, AF067844, AP000510, AC004974, AC005821, AC005531, AL135745, AP000966, AC005048, AL109628, AL049765, and AL133553.
HTGED69	5932	754761	1 - 178	15 - 192	
HTGEF77	5933	771825	1 - 486	15 - 500	AC005971.
HTGEF78	5934	769764	1 - 154	15 - 168	
HTGEG76	5935	769765	1 - 418	15 - 432	AC009044.
HTGEL46	5936	685425	1 - 445	15 - 459	
HTGEL54	5937	728905	1 - 400	15 - 414	
HTGEL55	5938	684871	1 - 329	15 - 343	N71581, N73880, N99573, AL283842, AA928413, AC007993, AC006312, AC004678, AF030453, AC005088, AC004983, AP000353, AL132992, and AC003010.
HTGEO46	5939	674409	1 - 495	15 - 509	
HTGEO86	5940	703733	1 - 609	15 - 623	
HTGEO94	5941	723097	1 - 629	15 - 643	AC004918.
HTGEP20	5942	799683	1 - 388	15 - 402	AF65476, AA496014, AA461080, AA229933, H65475, AC002310, AC005071, AC006948, AC004801, Z79997, and AL078611.
HTGEP92	5943	789681	1 - 785	15 - 799	H40324, A7138283, AL298787, N54397, A642809, W24312, AA837771, AA701131, F33126, R02342, AA6400310, AA741403, AA747757, AL170170, AA229422, AA340226, AA434037, AA503018, AA177013, AA40571, AB15081, AA176257, AL119563, AW131761, AA605243, AA135360, AA365893, N64587, H79586, AI904445, R33068, AW302670, AI927275, AW388866, H43183, N52501, AI080732, AA582350, AA748826, AA629679, AA579281, AA133332, AW407632, AL042667, AL042670, AI349130, AA565534, AA587215, AI858277, AA578066, AA525253, AC006312, AL022322, U29119, AI109963, AC005071, AC007016,

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HTGEQ11	5944	967047	1 - 380	15 - 394	
HTGEQ34	5945	703443	1 - 416	15 - 430	
HTGEQ40	5946	711181	1 - 120	15 - 134	
HTGEQ61	5947	741828	1 - 395	15 - 409	
HTGEQ68	5948	753031	1 - 432	15 - 446	
HTGER72	5949	683469	1 - 380	15 - 394	
HTGET46	5950	719048	1 - 332	15 - 346	
					AL008823, AA812684, AC004477, AF053356, AL024507, AC005736, AC006942, AC004605, and AL049569.
					AW074332, AA780818, AL688303, AL668951, AL420747, AA640305, AL174703, AL044438, AA569565, AA601333, AL270280, T96028, AL613459, AA631434, AL114851, AA568303, AA568311, AW275640, AL047685, AA493546, AL048651, AA180056, AV452106, AL1275380, AA669225, AL150693, AA846944, C14144, AL079508, AA548142, M85807, H59296, AL918550,

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					Z98751.
HTGFB2	5951	778928	1 - 558	15 - 572	
HTGFC06	5952	935470	1 - 425	15 - 439	
HTGFC20	5953	668924	1 - 429	15 - 443	
HTGFC70	5954	757193	1 - 351	15 - 365	N86992, AI241637, AA483583, AA830169, AA506744, AL021990, AA332991, AL283064, AA807583, AA229218, AA652422, AA229121, AA229188, N73511, AA904211, T29897, F25301, AA679061, AL207491, AL218171, AW103753, Z25411, A1079901, AL148404, AL683846, R73803, AL683385, AA847570, AA584564, AL627868, AT744175, AA657373, AA513141, AA513181, AA650053, AA364869, W04322, AA468974, AA230025, AA468371, AA224966, AA228366, AA055307, AA224889, AA468505, AA228269, AA641112, AA224816, AL701379, AA467943, AL669514, AA524616, AA614254, T40617, AA714930, AW410116, AW390309, AA448221, AA121919, AW008093, AA363260, AA745524, AA744001, AA744272, AA744455, AA302628, AL751191, AA745288, AA743966, AL037929, AL037932, AL037932, AL923135, AA594510, AL660629, AH17675, AA877143, AL738813, AL619953, AA780046, AL538779, AA196824, AA988666, AC005884, Z94044, AL035451, AC003956, AC005747, AC009241, Z82176, AC010849, AC002365, Z84814, AP000230, AP000144, AL109967, AF001549, U50871, AP000035, Z98036, AC004686, D84296, AP000150, D83253, AL022147, AF000009, Z94161, AF157623, AC005105, AD000684, AC002128, AP000261, AP000100, AC006478, AC004812, Z97832, AF165147, AC007263, AC007543, AC004451, AP000350, AC005808, AC002068,

HTGPK43	5955	669722	1 - 310	15 - 324	AC006130, AL049745, AL035071, AC004016, AC006076, AC005037, AC007450, AC004813, AC007637, AC007075, AD001502, AC002477, AC006019, AL117352, Z97989, AC006947, AC005180, AC002123, AC004794, AL121934, AC005228, AP000343, AC007228, AL034451, AC002997, AC004514, AC006315, AC007681, AL109653, AC005921, AL133246, AC006571, AL136168, AL079339, AL022726, AC004025, AC005722, AC006254, AC006059, AC006953, AC015853, AC003077, AL049635, AC005104, AC004972, AC005599, AC007226, AC005053, AC005071, AP000358, AC004017, Z84718, AP000359, AC002565, AC004028, AP000351, AL031846, AC004883, AL022336, AC006285, AP000352, and Z97200.
HTGPN46	5956	669722	1 - 487	15 - 301	AL027665.
HTGPO51	5957	866957	1 - 402	15 - 416	
HTGPO75	5958	767032	1 - 267	15 - 281	
HTGPP07	5959	952555	1 - 329	15 - 343	
HTGPP49	5960	722626	1 - 227	15 - 241	AA564583, and AA583827.
HTGPP59	5961	718974	1 - 150	15 - 164	
HTGPP62	5962	742908	1 - 519	15 - 533	AL024508.
HTGPR80	5963	810302	1 - 377	15 - 391	
HTGFW29	5964	690276	1 - 235	15 - 249	AW392539, T08628, R19000, W40396, T07400, and Z98043.
HTGFW63	5965	744678	1 - 711	15 - 725	AC009304.
HTGFX16	5966	656777	1 - 323	15 - 337	AL637766, AA203538, AL341753, W35269, W23591, and AL137383.
HTGFX82	5967	779055	1 - 341	15 - 355	AA351139.
HTGFZ03	5968	923443	1 - 262	15 - 276	
HTGFZ35	5969	707730	1 - 297	15 - 311	AL870366.
HTGFZ58	5970	735683	1 - 331	15 - 345	
HTGGL08	5971	958583	1 - 463	15 - 477	
HTGGL11	5972	966328	1 - 318	15 - 332	AC002359.
HTGGL23	5973	974590	1 - 435	15 - 449	
HTGGL32	5974	698714	1 - 412	15 - 426	AA252763, AA538697, H59023, AL824562, AL043721, AW338086, AL205126, AA059154, AL251002, H64777, AL69172, AA605274, AA584581, AA745410, F34558, AA318652, AL648558, AL079804, AL339850, AW193295, AA098922, AL284640, AL286356, N27253, AL3400747, AA507547, AL469796, AL18620, AA515224, AL623898, AL809023, AA594145, AW129001, AA317170, F37169, AL039958, AL003734, AW166815, AA747472, AL919265, F27015, AL962030, AW438643, AW029038, M62249, N71724, AL053672, AA916039, AL250019, AA515051, AA587604, AA077817, AL281881, AL565245, AL144055, AW440836, F36273, AL564185, AL929531, H88666, AA491762, AA572975, AL038785, AL344443, AL951863, AL918421, AW162049, AL555224, AL904894, AA652057, F29989, AL537955, AA095511.

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HTGGL43	5975	714932	1 - 204	15 - 218	
HTGGL79	5976	774657	1 - 254	15 - 268	AA826138.
HTGGM20	5977	669083	1 - 586	15 - 600	AW083689.
HTGGN13	5978	869239	1 - 580	15 - 594	AF557095, and AL136295.
HTGGN92	5979	927051	1 - 345	15 - 359	AL021453.
HTHAA47	5980	503638	1 - 421	15 - 435	AA383871.
HTHBA07	5981	954426	1 - 190	15 - 204	AA383894.
HTHBA18	5982	502818	1 - 115	15 - 129	
HTHBA68	5983	915256	1 - 600	15 - 614	AA383725.
HTHBC31	5984	578568	1 - 456	15 - 470	AA383947.
HTHBC37	5985	502935	1 - 246	15 - 260	AA383950, and AA383958.
HTHBC67	5986	904562	1 - 806	15 - 820	AW367259, and AB029039.
HTHBL65	5987	526716	1 - 119	15 - 133	
HTHBL65	5988	921965	1 - 427	15 - 441	
HTHBC09	5989	531115	1 - 231	15 - 245	W76016, and AF190465.
HTHBC04	5990	529671	1 - 317	15 - 331	AP000701.
HTHBU75	5991	557957	1 - 121	15 - 135	
HTHBU69	5992	757741	1 - 233	15 - 247	
HTHBY64	5993	712474	1 - 480	15 - 494	AC000073, and AC000092.
HTHCA17	5994	572407	1 - 284	15 - 298	
HTHCA75	5995	712649	1 - 1007	15 - 1021	AA203124, AA780042, AA215401, AF048727, AC002086, AC002385, AC004835, Z92545, AC004690, AL050337, AC004087, and AL024493.
HTHCB68	5996	660309	1 - 345	15 - 359	AF132607, and AB006626.



HTHCB83	5997	578858	1 - 309	15 - 323	AL1219546, AL669108, AA812176, T64527, AL11076, AA658101, AA452879, AL537814, NS5560, AL261932, AL863180, AL270092, AW197990, AL801031, AL540367, AL987277, AA632493, AA632484, AL659402, AA426571, AW19317, AL248494, AL040524, AL602233, AT118218, AL707565, AL183878, AL792929, AL752815, N71340, N71390, AL190467, AL459213, AA347735, AA317898, AL133804, NS5012, AA658540, AL00114, W24602, AW197508, AA484366, H65476, H65475, T40298, AA496014, AA767864, AL00114, W24602, AW197508, AA461080, AL065039, AL355433, N34481, AA287259, H72049, H73336, AA584675, AA486859, AL092461, Z98751, AC000057, AF121781, AL031390, AL049776, AC016026, AL53323, AP000518, AL031848, AC005899, AL022323, AC007228, AC005295, AC005800, AC007216, AC002312, AL035089, AC002511, Z84466, AC005257, AC002126, AL033504, AC002054, AL096791, AC007845, AC007878, AC005399, U95742, AC000379, AP000032, AL034429, AC005512, AC006211, AC022517, AL008721, AC003036, AC006057, AC002549, AC009399, AC002301, AP000553, AC007201, AC009516, AC004797, Z54147, AC009363, AC007114, AC006946, AC006441, AC004590, AL022721, AC008064, AC005519, AF002993, AC002472, Z86090, AL079342, AC009501, AC007664, AC004813, AC007546, AC005529, AC008018, AC008124, AC005520, AC005225, AC002563, AC006953, AF050154, AC002996, L78833, AL031985, Y11793, AC005362, U91326, AC002544, AC007182, AF196971, Z75888, AC004167, AC002425, AL133485, AC004882, AC003109, AC007637, AC000068, AL033381, AC007786, M19364, AL021154, AL001670, Z85987, AC008928, AC003071, AC004084, AC005015, Z97053, AL121825, Z93017, AC004531, AC003470, AB017335, Z54334, AC004985, AL120201, AL049540, AL109952, AC005233, AL022067, AC005368, AC016025, AC004079, Z75887, Z83853, Z94802, AL049553, AL132777, Z98941, AC006430, U91321, AR060472, Z75887, AC004453, AL109627, AC005482, AC003982, AC005694, M10065, AC008101, AC002073, AC004678, AL021391, AF038458, Z82184, AP00270, AC004491, AL009181, AC000026, AC003964, AC003012, AC006450, AL049712, Z79997, AP00514, AL035413, Y18000, AL121653, AL06216, AC002990, AC004966, AL133500, AC004104, AC002059, AC003010, AC000086, Z97630, AP000167, AP000052, AC003666, AC007792, AL008718, AC004149, AC002565, AC004534, AC005803, and AC007687.
HTHCC54	5998	578877	1 - 328	15 - 342	
HTHCD17	5999	664274	1 - 324	15 - 338	
HTHCD91	6000	973272	1 - 589	15 - 603	
HTHCG11	6001	967275	1 - 325	15 - 339	
HTHCG86	-6002	578843	1 - 357	15 - 371	
HTHCH22	6003	630239	1 - 673	15 - 687	
HTHCK42	6004	578875	1 - 279	15 - 293	
HTHCK38	6005	579080	1 - 402	15 - 416	
HTHCK42	6006	870355	1 - 403	15 - 417	

HTHCK91	6007	922873	1 - 330	15 - 344	AC011311, and AC005820.
HTHCM08	6008	959719	1 - 355	15 - 369	AA551975, Z98743, and AL079300.
HTHCM19	6009	842036	1 - 436	15 - 450	AA572753, AA836605, AA302978, AA45373, R67701, AA496309, AL306711, AA558404, F23307, AA376358, AL283938, AL573424, AW227905, AL354333, AA309634, AA610255, H67064, AL266359, AA302649, AL716049, F978313, AA297698, AW743945, AA502991, H79586, AL626359, AA302649, AL933716, AL800343, R83068, AA747757, AA476739, AA176328, H49372, AA299221, AA102737, AA431513, AL370170, AA230146, AL16537, AA356376, AA225358, AL815383, AA632556, AA484256, AL278130, AL628859, AA714073, AA368759, AA612727, T48829, AA631801, R33091, AL185394, F35684, AA834807, AA372311, AA487509, AL915081, AA713735, AL973173, T40629, AL300818, AW265688, AL310992, AA643829, AA604831, AL031733, AC005274, T34294, AC000120, AC004602, AC005828, AC005412, AC004884, AC004448, AC006509, AL117344, AL035685, AC004129, AL133246, AL022163, AC004895, AL050348, AC002468, AL080250, AC009501, AL031848, AL022726, AC004817, T47924, AF015262, AC005231, AL229043, AL021939, AF111168, AC002988, AF027390, AL022336, Z85987, AC005971, L78833, AC002996, AL078593, AC005527, AL133243, AC007955, AL021154, Z98941, AL049832, U63721, AL022721, AC005255, AF196779, AC005329, AC009247, AL022476, AL135744, AL031311, AC006536, AC004253, AL133448, AL023575, AC007676, AC006612, AP000115, Z83844, AC003914, AP000343, AC007934, AC007371, AC004000, AP000121, AC005911, AC007666, U85195, AC002395, AP000045, AP000113, AL133163, AL109628, AC002091, U62292, U89335, AB006058, AC004008, AC004106, AL121653, AF075074, AC000039, AL117258, AL023581, AC005366, AP000502, Z93241, Z98051, AC007050, AC002477, AP000305, U95742, AC008372, AL049795, AL035249, AC007363, AC005820, Z98946, Z98884, AD000833, AC005940, AB020868, AC002303, AC007216, AL023653, AC005755, AC015853, AC004125, Z95114, AF134726, AC006241, AL132712, AL031433, AC005520, Z86090, AC005800, AC003695, AP000501, AP000103, AP000047, AC008989, AP000512, AC005081, AC004874, AC007917, AC010077, AP000553, AL049843, AC008154, AC004962, AL031577, AC005003, AC005189, AP000359, AL031427, AL033638, AL033392, AC007225, AC004854, AC002126, AC005551, AC007308, AC004797, AL031588, AC007358, AC004887, AC002316, AL079295, AC005921, AC005859, AP000116, AP000509, AL035400, AL034379, AC004019, AC007324, AC002528, AL109801, AL110292, AF015416, AL035684, AC004984, AC004447, AL122020, AL049697, AL121658, AL022326, AP000694, AC002312, AC008044, AC002629, AC005476, AC009372, AF047825, AC002310, AC003071, AC002350, AL049856, AC006064, AC007444, AF196972, AF047825, AL032821, AC005089, AC007277, AC007688, AC006317, AC002119, AC004851, AC007283, AC005082, AL031662, AC005228, AC004659, AF126531, AL008726, AC006430, Z97030, AL031602, AL031295, AC007066, AC005786, AC005291, AF196969, AL109807, Z85986, AC005225, Z93930, AL035420, U82828, AC005190, AC006023, AP000032, AL049569,

					AC005746, AF001548, AC000026, AC004985, AC005599, Z95115, AC007536, AF000350, AL049643, and AC002106.
HTHCM39	6010	578831	1 - 338		AC004918.
HTHCM38	6011	578826	1 - 421		
HTHCQ28	6012	705888	1 - 458		
HTHCQ92	6013	578757	1 - 71		AA724718, and AW297844.
HTHCQ31	6014	926330	1 - 622		T80675, and AA836398.
HTHCQ63	6015	959994	1 - 348		AF000172, AP000057, AP000125, and AP000330.
HTHCR16	6016	578722	1 - 309		
HTHCT64	6017	856477	1 - 407		
HTHCU43	6018	578849	1 - 285		AA758534.
HTHCU85	6019	578851	1 - 300		
HTHCV21	6020	671098	1 - 230		AA678938, AA703089, AF057177, AF159056, AC006033, and AC007245.
HTHCV22	6021	419714	1 - 320		
HTHCY59	6022	937393	1 - 381		
HTHCW35	6023	707732	1 - 254		AI438940.
HTHCW45	6024	578823	1 - 217		
HTHCW83	6025	578828	1 - 238		
HTHCX84	6026	578874	1 - 289		
HTHCY12	6027	971165	1 - 501		AA287931, AI341725, AI885252, AA481510, AA910745, and AA651762.
HTHCZ96	6028	578876	1 - 292		
HTHDD40	6029	707065	1 - 354		
					AA393224, AI016087, D81712, AA196338, AA935945, AI366709, AI187411, AI138856, AI300972, AI208569, AI681313, AI306498, AA192299, AI269875, AI735291, AI749426, AI971045, AI078265, AI308072, AI479418, AI870613, AI347395, AI273636, AA780190, AI469870, AI971121, AW005093, AI310114, AI142657, AA917590, AI094689, AI273866, AA975941, AA626296, AA620996, AA435851, AA416923, AA770226, AA443766, N73669, AA416838, AI266465, AI311563, AA196360, AA026598, AI306499, AI690271, AI196353, AA025864, AA723525, AI264128, AI292139, AA469915, AI681934, AA476818, AI680820, AA806060, AW138575, AI919372, N78510, W84495, AI735033, W84355, AA417880, AA192313, AI804297, AI914087, and AF161386.
HTHDE26	6030	869483	1 - 809		Z59408.
HTHDE44	6031	791641	1 - 374		AL031120.
HTHDE91	6032	967215	1 - 295		AC004854.
HTHDF38	6033	870339	1 - 684		H88681.
HTHDE24	6034	574675	1 - 493		
HTHDE34	6035	490926	1 - 118		

HTHD31	6036	959718	1 - 401	15 - 415	
HTHD31	6037	870335	1 - 353	15 - 367	AP000501.
HTHD43	6038	578878	1 - 320	15 - 334	AA230122.
HTHD43	6039	579199	1 - 239	15 - 253	AA639236, and AA838091.
HTHD46	6040	578834	1 - 370	15 - 384	
HTHD70	6041	578882	1 - 294	15 - 308	
HTHD83	6042	966858	1 - 314	15 - 328	
HTHD89	6043	579076	1 - 206	15 - 220	
HTHD89	6044	578848	1 - 354	15 - 368	AC005081, and AC005015.
HTHD80	6045	764136	1 - 598	15 - 612	
HTJAB35	6046	491273	1 - 507	15 - 521	
					AA504694, AW372019, AL133355, AC005484, AC007151, AC005527, AF053356, AL049872, AC005529, AC016026, U95742, AL049795, AC005295, U91321, AC007845, AC002365, AC002404, AC004675, AC006101, Z98051, Z98941, AC007842, AF088219, AC013256, AL096701, AC005664, AP000501, AC004895, AL031595, Z93023, and AC005102.
					AA078502, AC000385, and AC004924.
HTJAB39	6047	705432	1 - 468	15 - 482	
HTJAD26	6048	681865	1 - 613	15 - 627	
HTJAE28	6049	703321	1 - 288	15 - 302	Z93242.
HTJAE42	6050	668339	1 - 384	15 - 398	H97454, and AI703400.
HTJMB71	6051	760226	1 - 832	15 - 846	AL274138, AA828653, AA746171, AA955034, AC004834, AC006238, AC006050, and AL031774.
HTJMD95	6052	924240	1 - 459	15 - 473	
HTJMH80	6053	774407	1 - 549	15 - 563	W28136.
HTJMQ69	6054	754605	1 - 310	15 - 324	
HTJMR65	6055	729039	1 - 108	15 - 122	
HTJMT23	6056	948518	1 - 354	15 - 368	
HTJMT75	6057	766883	1 - 551	15 - 565	AI033483, and AA011410.
HTJMU34	6058	870316	1 - 688	15 - 702	AA248207.
HTJMU77	6059	771677	1 - 737	15 - 751	AA513791.
HTJMU87	6060	870315	1 - 303	15 - 317	
HTJMV80	6061	775766	1 - 658	15 - 672	T55626.
HTJMW42	6062	713132	1 - 506	15 - 520	AC007845, AC016025, and AC016026.
HTJMX71	6063	759910	1 - 490	15 - 504	
HTJMZ90	6064	787655	1 - 343	15 - 357	
HTJNB83	6065	766881	1 - 261	15 - 275	
HTJNC42	6066	713142	1 - 522	15 - 536	AA465661, and AB002390.
HTJNC53	6067	793328	1 - 320	15 - 334	AA311589, H14706, AA215801, R59006, H23078, H04923, T80563, and AA160069.

HTIND12	6068	870311	1 - 526	15 - 540	
HTIND42	6069	924726	1 - 360	13 - 374	AI147197, and AI307151.
HTIND36	6070	924939	1 - 427	15 - 441	R61153, F07094, AC007845, AC016025, AC016026, Z79966, and Z56830.
HTIND52	6071	795110	1 - 429	15 - 443	W39786, AL046597, AA089711, AA353463, and W07210.
HTIND95	6072	771941	1 - 553	15 - 567	AL118563, AA206533, AL118569, and AB023187.
HTIND19	6073	781702	1 - 265	15 - 279	
HTIND53	6074	870336	1 - 706	15 - 720	
HTIND55	6075	931039	1 - 297	15 - 311	AA362919.
HTOA48	6076	870027	1 - 327	15 - 341	
HTOAF15	6077	866201	1 - 1378	15 - 1392	AA552784, AA654062, AA654973, AC002565, AC004491, Z85986, AC000353, AF001548, AP000553, AC002115, AC004878, AC004883, AL031846, AC002316, U91321, AC005037, AC005488, AL022320, AC007021, AL049553, AL121595, and AC006120.
HTOAI35	6078	799686	1 - 108	13 - 122	
HTOAI69	6079	529555	1 - 247	15 - 261	AC007676.
HTOAI93	6080	751902	1 - 222	15 - 236	
HTOAK34	6081	906800	1 - 1271	13 - 1285	AW408167, AA491322, AA505126, AL340133, AA831203, N27153, AA053564, AA809481, AF181985, and AF179867.
HTOAK36	6082	921745	1 - 319	13 - 333	
HTOAO19	6083	954183	1 - 193	13 - 207	
HTOAO75	6084	530192	1 - 210	15 - 224	
HTOAT80	6085	530186	1 - 272	15 - 286	AC005071.
HTOAU62	6086	738214	1 - 386	15 - 400	
HTOAU94	6087	620370	1 - 514	15 - 528	
HTOAW19	6088	530114	1 - 189	13 - 203	
HTOAW26	6089	530116	1 - 97	15 - 111	
HTOAW37	6090	507322	1 - 378	13 - 392	H16881.
HTOBA06	6091	960618	1 - 382	13 - 396	
HTOBA10	6092	839919	1 - 389	15 - 403	AC002433.
HTOBE15	6093	715538	1 - 361	15 - 375	R43482, and R43481.
HTOBF03	6094	925407	1 - 203	15 - 317	
HTOBF07	6095	954184	1 - 127	15 - 141	
HTOBF35	6096	530325	1 - 302	15 - 316	
HTOBCG27	6097	682263	1 - 441	15 - 455	N55594, and AF176915.
HTOBCG70	6098	740977	1 - 134	15 - 148	
HTORO11	6099	966734	1 - 553	15 - 567	
HTOCF92	6100	550009	1 - 399	15 - 413	R87130.

HTOCK26	6101	523838	1 - 363	15 - 377	AW449222, and AC006427.
HTODR23	6102	530149	1 - 296	15 - 310	
HTODC33	6103	921426	1 - 536	15 - 550	
					R70629, AW340510, AA743712, A1239711, AA934974, AA970927, AW296573, AA453769, A124282, AA831667, AA278373, A1767205, AA292622, AA063568, AW361666, AW361612, AW361497, AA287288, AA035698, AW361613, A1219908, R30835, R27605, R70528, AA837400, AA938942, AW361673, AW361492, and AB018289.
HTODE04	6104	927826	1 - 329	15 - 343	
HTODE78	6105	530397	1 - 325	15 - 339	
HTODG07	6106	880911	1 - 203	15 - 217	
HTODG10	6107	968505	1 - 331	15 - 345	
HTODG16	6108	909952	1 - 478	15 - 492	
HTODG47	6109	799691	1 - 514	15 - 528	AA252781, AW403969, and AL041242.
HTODG55	6110	852560	1 - 357	15 - 371	T38456, and Z93020.
HTODG58	6111	869998	1 - 110	15 - 124	
HTODG60	6112	558007	1 - 405	15 - 419	AL035667.
HTODG83	6113	676384	1 - 122	15 - 136	
HTODH04	6114	925386	1 - 467	15 - 481	
HTODH37	6115	708892	1 - 419	15 - 433	
HTODL81	6116	507295	1 - 339	15 - 353	Z55019.
HTODL85	6117	799701	1 - 430	15 - 444	M85453, AL031313, AC005027, AC007380, AC006059, AC004065, and Z97198.
HTODN58	6118	811293	1 - 208	15 - 222	
HTODN21	6119	869967	1 - 150	15 - 164	
HTODN27	6120	684343	1 - 413	15 - 427	AFI50267.
HTODN68	6121	527862	1 - 310	15 - 324	AF000996, AF000995, AF000994, and AC006376.
HTOEAO6	6122	960551	1 - 300	15 - 314	M85667.
HTOEAI2	6123	967754	1 - 345	15 - 359	
HTOEAE25	6124	523546	1 - 115	15 - 129	
HTOEC81	6125	529834	1 - 205	15 - 219	
HTOEC94	6126	529839	1 - 289	15 - 303	AC004168.
HTOED10	6127	839798	1 - 305	15 - 319	AB033094.
HTOED61	6128	742158	1 - 326	15 - 340	
HTOEG69	6129	967562	1 - 136	15 - 150	
HTOET10	6130	968492	1 - 304	15 - 318	
HTOEVS7	6131	774641	1 - 127	15 - 141	N68224, N67354, AA534053, AA555161, H08147, A1973260, T49754, AA559007, AA741221, AA741406, A1889391, A1815170, AW152571, AW148470, A1801172, R17748, AA559008, AL361148, A1149828, A1535872, A1862762, A135343, A1687528, AA873283, A1887750, D56730,

HTOEV40	6132	529822	1 - 416	15 - 430	AA724205, M91395, AA923525, AB868159, AB844307, AB088529, AA843944, AT546671, C18850, AL047714, AB887128, AL02636, R49351, AW304960, AD266270, N78996, AA771755, AT284521, AJ590380, AB983532, AT701872, AB182104, AW088205, AA555158, AL037579, AA729065, AA039866, AW149188, AI055984, AI356187, AA948673, AA844503, AA716447, AI357575, AI567166, AA864427, AA781287, AW131915, AI567615, AI016814, AT078701, AI569339, AA948326, AW264529, AW173730, AW119035, AI917880, AI338300, N70267, AL047952, AA776091, AA634359, AI023241, AI298320, AW074746, AI367199, AI311007, T96249, AI283337, AI687359, N66270, Z38562, AW268514, AA007156, D56496, D57534, D58194, AA852819, AT744922, AW241346, AA985276, AI901863, AA468218, AW170129, AA746260, AW305377, AI520939, AA468200, C16188, AI582534, AI690349, AA910908, N64254, AW021711, T31245, AW337845, AI556169, AI858397, AT766339, AI873603, AA887384, AI917555, AA4468325, AI356978, AW243937, AI624978, AI363736, AI473615, T63046, AW262693, AI357870, AW027859, AI476195, AA975137, AI830023, AW148889, AI624332, AI984869, AI588857, AI623999, AI890602, AI923387, AI624546, AI984874, AW338727, AI924795, AI174614, AW338383, AW261865, AA740176, AW273343, AW167058, T93303, AA524754, T58485, T34321, D57153, R74097, AI804969, AA468252, D57519, AW167058, AA708254, D57672, AW193991, AI884463, AI912364, AI623438, T92456, Z62556, D56644, AI911864, AI620441, AB887188, T49753, AW084621, AI979068, T31365, R62949, AI953779, T06806, R56859, AI978655, AA633903, AA812406, D56697, H88939, AW440337, H88746, R43948, D57697, AA173385, AI35183, AW023129, C16259, C16182, R77884, D57476, C16244, C16256, AI361970, AA173140, R67928, C16175, C16228, C16261, AT735323, D56668, D56538, H26265, H05623, AW023819, AA987712, W45132, AA370387, H43894, AA113139, AA083045, AA074156, C16393, H43403, D58338, H88747, AI285675, AA856577, F08907, AA586771, AI827352, AA641695, D57786, AI525653, and AF152462.
HTOEV40	6132	529822	1 - 416	15 - 430	AC006031.
HTOEVB70	6133	529820	1 - 207	15 - 221	
HTOEVB72	6134	659494	1 - 242	15 - 256	
HTOEVA04	6135	845519	1 - 117	15 - 131	
HTOEVB55	6136	723256	1 - 285	15 - 299	
HTOEVB73	6137	742153	1 - 193	15 - 207	
HTOEVC70	6138	811291	1 - 342	15 - 356	
HTOED10	6139	968469	1 - 260	15 - 274	
HTOED31	6140	529674	1 - 190	15 - 204	
HTOED57	6141	529673	1 - 290	15 - 304	
HTOEO05	6142	932662	1 - 86	15 - 100	

HTOF041	6143	529617	1-102	15-116	
HTOF048	6144	720880	1-303	15-317	AA083844, and AC009464.
HTOF122	6145	939903	1-2369	15-2383	
HTOF134	6146	527144	1-257	15-271	
HTOGA06	6147	960554	1-295	15-309	
HTOGA25	6148	529959	1-173	15-187	
HTOGA35	6149	751989	1-517	15-531	W24682, N36613, T97784, AW450574, AW007560, T79529, W44828, T81699, AA279071, AA492367, W73735, AL767757, W73412, AL650834, and AF086296.
HTOGA51	6150	530331	1-109	15-123	
HTOGB55	6151	781591	1-387	15-401	AA336963, and AA835914.
HTOGB92	6152	529810	1-316	15-330	AC006211.
HTOGC16	6153	927835	1-124	15-138	
HTOGC20	6154	960094	1-331	15-345	
HTOGD28	6155	529806	1-334	15-348	
HTOGD43	6156	650846	1-312	15-326	
HTOGD50	6157	529805	1-421	15-435	AA805738, and AC004527.
HTOGI75	6158	869973	1-320	15-334	AL024508.
HTOGI86	6159	507294	1-319	15-333	
HTOGR50	6160	529824	1-230	15-244	
HTOGR65	6161	618316	1-616	15-630	AC005530, AB023048, and AP000511.
HTOGL30	6162	961776	1-92	15-106	
HTOHB03	6163	924986	1-621	15-635	
HTOHB42	6164	714073	1-353	15-367	
HTOHB66	6165	966688	1-756	15-770	T95688, and T95163.
HTOHC78	6166	577745	1-310	15-324	
HTOHC84	6167	537370	1-343	15-357	
HTOHD27	6168	799676	1-189	15-203	
HTOHP53	6169	531172	1-268	15-282	
HTOHG55	6170	537366	1-238	15-252	AA229326.
HTOHL60	6171	740611	1-378	15-342	
HTOHL22	6172	968308	1-230	15-244	
HTOHL35	6173	537364	1-217	15-231	
HTOHM54	6174	537363	1-261	15-275	AC007845, AC016025, and AC016026.
HTOHN24	6175	971728	1-129	15-143	
HTOHN42	6176	537362	1-176	15-190	AF076455, and AL034421.
HTOHP13	6177	530350	1-403	15-417	AA465694.



HTOIS32	6178	678071	1 - 252	15 - 266	AL133485.
HTOIS68	6179	507136	1 - 336	15 - 350	AC005531.
HTOHU09	6180	920734	1 - 155	15 - 169	
HTOHV29	6181	527865	1 - 403	15 - 417	
HTOHX74	6182	507139	1 - 455	15 - 469	AC004020.
HTOHZ61	6183	537371	1 - 392	15 - 406	AL035079.
HTOIA12	6184	851032	1 - 532	15 - 546	
HTOIA68	6185	584946	1 - 331	15 - 345	
HTOIJ67	6186	537354	1 - 342	15 - 356	
HTOIK06	6187	954518	1 - 316	15 - 330	
HTOIK08	6188	959996	1 - 587	15 - 601	
HTOIN17	6189	537322	1 - 365	15 - 379	AA521458, AA465140, AW268432, AL018232, and Z85996.
HTOIQ29	6190	506720	1 - 410	15 - 424	
HTOIQ36	6191	537320	1 - 277	15 - 291	
HTOIO79	6192	537321	1 - 308	15 - 322	
HTOIP32	6193	869941	1 - 457	15 - 471	
					M62242, AA632589, AA654874, AL380617, AA548921, AA405475, AA078450, AL500315, AA713720, AA478369, H94979, AP000300, AC007051, AC007919, AC005592, AC004475, AF190465, AP000113, AP000045, AL109758, AL031665, AL035422, U07562, AL121580, Z98200, AL049776, AC006211, D31872, I25849, AL031427, AC005005, AC006480, AC006006, A65971, AP000238, AC002550, AC003662, AP000094, AL031289, AC003109, AC006511, Z97195, AP000283, AP000284, Z84477, AC004084, AP000040, AP000356, AC005971, S48539, U93096, L29348, L29348, X17648, A28928, AL023799, AF108459, AC005745, AP000288, AB004907, AL096805, AP000543, AF149773, AP000544, Z82190, AP000109, AP000041, AC012627, Z95329, Z95331, Z95400, AC007666, AL035455, AC006285, AC005154, AC007934, AC005355, AC007395, AC002307, AC007371, AC007486, AL031283, AC006536, and AL022318.
HTOIP53	6194	557824	1 - 295	15 - 309	
HTOIQ05	6195	932440	1 - 395	15 - 409	
HTOIR12	6196	537319	1 - 272	15 - 286	
HTOIS27	6197	485268	1 - 493	15 - 507	
HTOIT32	6198	418666	1 - 81	15 - 95	
HTOIW02	6199	920752	1 - 279	15 - 243	AB032254.
HTOIW40	6200	669595	1 - 257	15 - 271	AL133241.
HTOIY09	6201	836003	1 - 518	15 - 532	
HTOIZ34	6202	707039	1 - 228	15 - 242	N44119, AL560189, AC005670, AC004675, AF088219, and AC005332.
HTOIA65	6203	456824	1 - 547	15 - 561	

HTOIA83	6204	574764	1 - 343	15 - 357	AL035209.
HTOIA86	6205	968510	1 - 256	15 - 270	
HTOIB59	6206	574761	1 - 432	15 - 446	
HTOIB67	6207	726577	1 - 589	15 - 603	
HTOIF65	6208	715820	1 - 331	15 - 345	
HTOIG08	6209	869926	1 - 152	15 - 166	
HTOIJ24	6210	766963	1 - 378	15 - 392	
HTOIJ77	6211	574735	1 - 488	15 - 502	H50743, W89032, and AC004908.
HTOIK48	6212	574348	1 - 424	15 - 438	
HTOIK79	6213	531320	1 - 392	15 - 406	
HTOIK84	6214	952741	1 - 616	15 - 630	AC002480.
HTOIL55	6215	825165	1 - 197	15 - 211	
HTOIL71	6216	574529	1 - 186	15 - 200	
HTOIM06	6217	936089	1 - 870	15 - 884	
HTOIM70	6218	799689	1 - 305	15 - 319	
HTOIS81	6219	711021	1 - 395	15 - 409	AA248014.
HTOIT90	6220	921016	1 - 457	15 - 471	AA295824, and AL034374.
HTSA422	6221	415775	1 - 436	15 - 450	AA295824, and AL034374.
HTSEL38	6222	521995	1 - 284	15 - 298	AA055031, A1693951, and AC000353.
HTSEZ77	6223	935620	1 - 253	15 - 267	
HTSGB93	6224	526625	1 - 518	15 - 532	AA725078, A1040862, N90022, A1453081, A1023972, W52909, AA037352, A1470313, and AL035562.
HTSGM65	6225	576062	1 - 422	15 - 436	A1334632, and A1308136.
HTSGW24	6226	971724	1 - 597	15 - 611	AF111170.
HTSHA61	6227	960474	1 - 289	15 - 303	
HTSHD86	6228	773726	1 - 597	15 - 611	
HTSHF47	6229	720403	1 - 314	15 - 328	
HTSHM38	6230	972248	1 - 604	15 - 618	AL907172, C14389, C155076, D59467, D80164, D59787, D81026, D59610, D51799, D58283, C14331, D80022, D81030, D80043, D80241, D80038, D59502, D59839, D80227, D80166, D80195, D51423, D59619, D80210, D80391, D59275, D80240, D80233, D80212, D59927, D80196, D80188, D50995, D80219, D80269, C14429, D57483, D80366, D50979, D59889, D80193, D80251, C14014, D52291, AW177440, AA305409, D80378, D80024, D51022, D80045, AA305578, AW378532, D80522, T03269, AW178893, D51060, C75259, T11417, AA514188, AW179328, D80248, AW369651, D51250, AW352158, D80134, D58253, C14077, AW178762, AW178775, AW177501, AW177511, C14407, D80268, AA514186, D80133, AW176467, AW360811, F13647, AW377671, AW352117, C05695, AW375405, D80132, AW378540.

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HTUAA86	6232	522076	1 - 82	15 - 96	AL096763, AC005822, AC006023, AL031432, and AL009174.
HTWAB64	6233	522058	1 - 273	15 - 287	AA442624, AI382107, AA058620, AI526078, AI557241, AI541450, AI541346, AI557039, AL133054, A82595, and A82593.
HTWAH16	6234	880725	1 - 231	15 - 245	AL031733.
HTWAH51	6235	614968	1 - 290	15 - 304	
HTWAM50	6236	753217	1 - 220	15 - 234	
HTWBD74	6237	716756	1 - 305	15 - 319	
HTWBE77	6238	781306	1 - 761	15 - 775	
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HTWB61	6239	579041	1 - 257	15 - 271
HTWB63	6240	576623	1 - 593	15 - 607
HTWB62	6241	854019	1 - 330	15 - 344
HTWB64	6242	711271	1 - 463	15 - 477
HTWBH73	6243	708331	1 - 290	15 - 304
HTWBH15	6244	842014	1 - 616	15 - 630
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HTWB171	6245	935647	1 - 331	15 - 345	
HTWBL88	6246	784364	1 - 166	15 - 180	
HTWB885	6247	577510	1 - 272	15 - 286	
HTWB055	6248	732182	1 - 563	15 - 577	R56200, AL039384, AA780900, H06076, and AL287520.
HTWB054	6249	787303	1 - 305	15 - 319	AA333449, AL123407, AL611123, AF090834, AF097832, and AF153679.
HTWB201	6250	578678	1 - 547	15 - 104	AL475768, D89870, and AC004152.
HTWCA19	6251	582498	1 - 561	15 - 561	AL035209.
HTWCA76	6252	770109	1 - 363	15 - 377	
HTWCD27	6253	658018	1 - 449	15 - 463	
HTWCD40	6254	670812	1 - 466	15 - 480	
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HTWCIE72	6255	575962	1 - 258	15 - 272	
HTWCIF06	6256	935641	1 - 359	15 - 373	
HTWCIF25	6257	924008	1 - 365	15 - 379	
HTWCIF94	6258	747197	1 - 438	15 - 452	
HTWCOC45	6259	548176	1 - 469	15 - 483	

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HTWCC65	6260	869547	15 - 314	<p>U38997, AF072420, U63496, U13102, U63494, U13124, Z18645, Z18655, AF203774, AF061340, U13112, U63501, U63500, U63490, AF072428, U63504, U63489, AF072429, AF072430, U63495, AF058292, U63498, U63510, U63491, AF072414, U63508, Z18661, and U63495.</p> <p>AI624279, AW080402, AI57181, AI684234, AI269862, AI917055, AW090071, AI1284517, AI040243, AI318280, AW149227, AW148716, AI567993, AI567993, AW150578, AI060099, AI801325, AI500662, AI079963, AI045266, AW087445, AI275175, AI499381, AI038033, AI036361, AW151138, AI433976, AW059713, AW170635, AI364788, AI044500, AI033157, AI434223, AA508692, AI539771, AI636445, AI537677, AI500659, AI500523, AW274192, AI610362, AI612920, AI500706, AI491776, AI445237, AI572787, AW302988, AI564719, AI039086, AI039276, AI702433, AI783504, AW082113, AI044207, AI620284, AI637384, AI620287, AI590118, AI815855, AI345416, AI042551, AW071349, AI121328, AI633037, AW302973, AW268060, AI633493, AI289937, AI281773, AI049085, AI480118, AI099463, AI119748, AI312428, AW301409, AI613017, AI119791, AW301505, AI539153, AI590415, AI284509, AI349598, AI815232, AI249323, AW080848, AI036736, AI45612, AI590415, AA427700, AI559296, AI955917, AI862139, AW132056, AI308032, AI696612, AI274508, AI476046, AI873644, AI890833, AI926790, AI889376, AI036403, AI524671, AW051258, AI921248, AI873704, AI498579, AI619502, AI677796, AI802542, AI886753, AW026882, AI254042, AW071417, AI702073, AI273142, AI758437, AI036396, AI038605, AI800453, AI800433, AW088903, AI571551, AI554245, AI568870, AI224992, AI362637, AI036146, AW088793, AI699857, AW169653, AI801544, AI043981, AW074993, AX287231, AI140239, AW117382, AI679764, AW243820, AI282903, AI491852, AI816010, AW262565, AI121270, AI468872, AI497733, AI624206, AI042628, AI919038, AI476109, AI110402, AI335426, AI468877, AI349645, AI521012, AI270707, AI488897, AI570989, AA225339, AI335426, AI468877, AI349004, AI284131, AW169671, AW131282, AI539808, AI923509, AI281772, AI950664, AW268220, AW103371, AI590120, AI682841, AI571909, AI632408, AI569583, AI064830, AI436456, AI499285, AI648684, AI567940, AI340582, AI134999, AW188382, AI036980, AI862144, AI621209, AW104724, AI6712913, AW023590, AW132001, AI745713, AI866608, AI047763, AW075413, AW059837, AI863014, AW168795, AI702406, AI570384, AI274013, AI252813, AW87296, AI500146, AI453322, AI499512, AI859511, AW002342, AI119049, AI569616, AI824557, AW475451, AI872711, AI041150, AI591316, AW023396, AI439350, AI269203, AI49236, AI799199, AI554477, AI889133, AW082040, AI612883, AW102785, AI03893, AA970409, AI561299, AI038779, AI269696, AI648663, AI868831, AI888953, AI254251, AI886124, AW238730, AI038565, AW089572, AI281779, AI633419, AI627909, AI445165, AW183130, AI536685, AI866002, AI036274, AI922901, AI282326, AI828731, AI633125, AW162071, AI133080, IB9947, E02349, A08913, AI049314, I48979, A08916, AF093117, I48978, AI137459, AI050108, AF113676, AF113690, AF118070, AI133075,</p>
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HTWCG69	6261	575950	1 - 298	15 - 312	
HTWC42	6262	713022	1 - 258	15 - 272	
HTWCX07	6263	953482	1 - 413	15 - 427	AF071704.
HTWCL29	6264	740327	1 - 67	15 - 81	
HTWCM36	6265	971129	1 - 758	15 - 772	
HTWCM56	6266	662321	1 - 549	15 - 563	AA215701, AA410338, AA060248, H47628, AA215700, and AA662185.
HTWCN33	6267	577494	1 - 463	15 - 477	AF1760702, AFI111105, U43186, AR008277, and AR008281.
HTWCN83	6268	573580	1 - 487	15 - 501	AC006502 and AL0335692.
HTWCN25	6269	575959	1 - 324	15 - 338	AC008394.
HTWCS11	6270	967190	1 - 190	15 - 204	
HTWCT42	6271	713870	1 - 253	15 - 267	
HTWCT61	6272	575975	1 - 447	15 - 461	AL023096.
HTWCX32	6273	669745	1 - 172	15 - 186	AW027225, and AW027591.
HTWCY05	6274	920337	1 - 346	15 - 360	AA807061, and C01387.
HTWCY69	6275	869553	1 - 356	15 - 370	AL031595.
HTWDB72	6276	835624	1 - 445	15 - 459	
HTWDF82	6277	921697	1 - 411	15 - 425	
HTWDH14	6278	669560	1 - 541	15 - 555	AW239198.
HTWDH75	6279	767368	1 - 479	15 - 493	AA021481, AA001501, AA253163, and AW080520.

HTWDM43	6280	715352	1 - 413	15 - 427	AI240780.
HTWDN01	6281	916680	1 - 325	15 - 339	
HTWDN17	6282	664115	1 - 331	15 - 345	
HTWDO60	6283	575939	1 - 92	15 - 106	
HTWDS35	6284	697825	1 - 393	15 - 407	AI633883, AI478126, AW002533, AC004815, and U88834.
HTWEA61	6285	965453	1 - 541	15 - 555	AI038664, AI051237, D82747, AI372493, AA302328, T48533, AI163010, AW275741, AW292131, AW149580, AW021288, AA148318, AA329440, AW270647, R12857, AA862706, AA342697, T27130, AA719848, T79010, AI026832, T69902, AA176086, AI670163, T69912, AA386145, H20652, T24661, AA337830, AA349447, AA3595861, AA373966, AA353685, AW270806, N84238, AA1196620, AA090164, D31885, AF223953, and AF172088.
HTWEC63	6286	735003	1 - 258	15 - 272	
HTWED17	6287	663714	1 - 377	15 - 391	
HTWED28	6288	686598	1 - 386	15 - 400	
HTWEG12	6289	970538	1 - 356	15 - 370	
HTWEH16	6290	661860	1 - 213	15 - 227	
HTWEJ14	6291	792648	1 - 451	15 - 465	
HTWEM37	6292	449136	1 - 472	15 - 486	Z99714.
HTWEM63	6293	745024	1 - 334	15 - 348	
HTWER78	6294	836799	1 - 460	15 - 474	AW364808, AI559215, AA923746, AA8336012, AW327798, AI335646, AA724748, AA009478, AA452221, AA620709, R79719, and AA422169.
HTWES75	6295	767257	1 - 255	15 - 269	
HTWEU29	6296	711673	1 - 525	15 - 539	R53304, AW003115, Z42971, Z45348, R06583, AA354539, R00344, F08048, AW175634, T89050, AA352746, H67220, AA344337, AA300562, T79104, AA315109, H51867, AW404159, AF069984, and AF069987.
HTWEX09	6297	625458	1 - 280	15 - 294	AC006389.
HTWEX18	6298	666305	1 - 488	15 - 502	AA059489, AW075945, W39013, AA040567, AI096342, AI268275, AA293239, AI200654, AI589359, H01352, AA505695, AI809808, AA873453, AA770600, AW005912, AI801978, AI698096, AA281486, AI703059, AI916594, AI703132, N90227, AW007805, AI459224, AI694044, AI744499, AI279707, AA827910, T58767, R32147, AI375599, AI630768, AI040897, AI697705, AA604916, W58385, AA487704, AW027528, R32148, AA406413, AI804406, AA625413, AI193139, AI377494, AI218362, AA410354, AA403249, H13466, H26699, AA411298, AI395731, AI956297, AI686815, N34404, AI694262, AI189875, AW072109, AI420673, AI375598, AI245296, AA911276, AI301717, AI580797, AI348624, AA398942, AI42929, AA478946, AA468790, AA406322, T94659, AW015590, R82573, AI142053, AI245287, T94308, AI034416, AA856758, AI369708, R64474, AI298484, AI382919, R08179,
HTWEY30	6299	918641	1 - 704	15 - 718	

HTWFB37	6300	708908	1 - 150	15 - 164	AA968824, AI019216, AA045499, RG6761, AA301164, N40439, AA862267, H12482, AW075870, AA909426, N26406, H01306, RG5586, AA330943, AA988873, R32091, AI074686, AA700656, AW085943, AA281713, AI784080, AA969464, AH73229, N48474, R82516, D45627, AI632296, AI695369, AI494115, RG5578, RG4489, H13422, AA889103, AA171756, AA487490, AW166636, AA988552, AA909799, T47762, AA171994, D59192, AF036549, and AF036548.
HTWFB75	6301	767253	1 - 400	15 - 414	AL120304, AL042433, and AL119341.
HTWFF46	6302	869499	1 - 415	15 - 429	T12305, and AC004765.
HTWFG44	6303	935270	1 - 581	15 - 595	AI828449, AI300539, AI624022, AW076128, AA733063, AA161130, AI076905, AW271222, AW276047, AI687613, F25075, AW243801, AA570095, AI248876, AI123429, AA099709, N78559, AA612778, AI692287, AI272255, AI002324, C75244, AI758604, AI524505, and N73712.
HTWFI19	6304	668579	1 - 346	15 - 360	AL132992.
HTWFK15	6305	869498	1 - 282	15 - 296	AL031733.
HTWFN20	6306	917272	1 - 572	15 - 536	AL132992.
HTWFFN64	6307	757593	1 - 520	15 - 534	AA599080, Z82206, AC005015, D87675, AL133243, AL031432, AP000113, AC004882, Z98884, Z98946, AC005971, AC006530, AC007766, AF165926, AC005081, L78810, Z83826, AC002375, AC004447, AC000085, AL034548, AC005387, AI079342, AP000346, AC005089, AC006960, Z99716, AC004491, AF045555, Z98051, AL023553, AL121653, AC002126, AC000039, AP000045, AC002425, AC005736, AC007292, AL121769, AP000555, D84394, AL080242, AC006130, AP000511, AC004000, AC006538, AC006468, AC007546, AL135744, AL050332, AC005180, AC005874, AF134471, AC005793, U95740, Z95152, AC002470, AC005335, Z93930, AL050307, AL096763, AC005933, U91326, AP000088, AL022476, AC000026, AC005622, and AC002544.
HTWFO63	6308	658473	1 - 144	15 - 158	AA608873, and AA722048.
HTWFF14	6309	869489	1 - 356	15 - 370	
HTWFFP33	6310	916562	1 - 670	15 - 684	
HTWFFP53	6311	721768	1 - 391	15 - 405	
HTWFFR17	6312	663697	1 - 380	15 - 394	AC008116.
HTWJAZ4	6313	954881	1 - 524	15 - 538	AA634223, and AA018611.
HTWJAS9	6314	812705	1 - 266	15 - 280	AA579184, F36373, AI348731, AI049986, AW074398, AW075915, AA732212, AL040462, AI611902, AA579278, AL119259, AI284467, AA078483, AI205181, F28576, T69214, AA730362, AI569086, AW274197, AW265197, AI624528, AI753365, AW088049, AI079910, AW161495, AA484262, AI14820, AA395841, AI821044, AW161522, AW160880, AA747889, AW079645, AL042856, AA366035, AI053477, AW021917, AW264969, AI205126, AA641103, AW087946, AL040913, AA167741, AI925040, AL046746, AL041450, Z99394, AA504951, AA878140.

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HTWJA83	6315	780990	1 - 318	15 - 332	<p>           AP000354, AC003029, AB011135, AP000300, AC007023, AL121655, AC004662, AC006356, AC005829, Z98745, AC006459, AC004990, AL132777, AC006013, AC006207, AC005251, AL134421, AC004783, Z68323, AC007617, AL021154, AL022319, AC004474, AP000475, AL1020995, AC004087, AC003086, AP000566, AL049539, AC006538, Z97353, AC003664, AC004647, AC004021, AC007358, AC003035, AC004449, AC005940, Z98946, AL133163, Z47046, AL133246, AL022313, AC005372, AP031078, AF030876, AC004460, AL056564, AL049553, AC005566, AL035400, AC004596, AC002395, AL031650, AL078476, AL049636, AP000248, AP000153, Z95114, Z18051, AC004417, AF196779, Z84483, AC008163, AC007226, AL023570, AF130343, AP000012, AC004800, AC004544, AL023284, AC004623, AL049835, AL031589, Z29895, AL049838, AC005412, AC006500, AC006241, AC004472, L76568, AC004834, AP000152, AP000010, and AC004525.         </p> <p>           F00717, D58893, AA129719, AL185580, AA548890, AL282793, AA843779, AA318189, F35649, AA501649, AP29746, AA514020, AP29738, AW162887, AA525508, AA984187, AL1500453, AL049671, AH70431, AL524360, AL311684, AW401658, AA641122, AA586667, F17632, AA503119, AA468022, AL470437, AA714110, AA493110, H64265, AA581471, AW022897, AL634187, AL457313, F17142, AL610376, AP932600, AW084258, AW131249, AA527209, AL133164, AL045813, AL886008, AA668340, AL857836, AW080777, AW118304, AA846090, AL130780, AA314877, AL556440, AL344957, AL676971, AA321168, TU7039, F25733, AA858372, TU2965, AA745373, AW250905, AA149724, AL219169, N23896, W39141, AL720193, AW005054, AL216151, AA305154, AA613624, AW150561, AA136577, AA653240, AA558560, AW405054, AL806102, AL581193, AA297666, AL600099, R49657, AL086830, AL366464, AL817976, AW080440, AA455483, AL110595, AW130093, AA129563, AA377824, AW402817, AL1669046, AW025074, AL223987, AA402129, AL134703, AW178018, AA574077, AW177870, AA101113, AA553363, AA707735, AA747305, AA580568, AL559564, AL859284, AA569183, AL681568, AL367473, AA228459, M78140, AA351753, AL431240, AA405453, AA908224, AA775173, AA180327, AA018823, AA489571, W26032, AL119921, AA179350, AL119158, T47084, AA972809, AC006953, AL121593, AC004552, M87921, AL033543, AL021391, AC004648, AL121652, AC004257, Z97205, AF152365, AE006658, Y07848, AP000504, AC000026, AL133233, AC002059, AC007040, AC006041, AL009183, AC008545, AP000102, AP000152, AC006037, Z98742, AL008633, AC004655, AC002331, AC004970, AC010722, AC004551, AC007785, AC008080, AL023879, AL021546, AP001552, AC005086, AL034548, AL024473, AC004962, AF135025, AC005568, AL000091, AC004517, AP000275, Z81364, AC005031, AP000105, AP000307, AC002530, AC007880, Z84466, AC004999, AC004520, AC020663, AL035070, AC002091, AL133448, AL021395, AP036572, U91328, L35485, AL121655, AC005486, AC004813, U91322, L09706, AP001137, AC005808, AP000502, AF019413, AC001231, AC004673, AC008273, AC003025, AF139813, AC004228, AR051479, AL031258, AC007707, AL033392, AC004834, AL033517, AL031295, AC004140, AC006211, AL137430,         </p>
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HTW/JA05	6316	796259	1 - 278	15 - 292	AC007245.
HTW/JC43	6317	715081	1 - 386	15 - 400	W52542, AA352300, AA492364, AA345395, AA523753, T40415, AA181184, AA664672, D53546, D53992, D54403, D54143, AA526619, D52804, AA180190, AA128647, AL0301557, AA159647, AA603905, AW005462, AA528259, AW069480, AL009850, AA531360, AA533239, AW170190, AW188490, AW327993, D54773, AA507186, AA847052, AL146888, AL081088, AW117656, AA327924, N99053, H88751, AL345372, AA532888, W32379, AL191222, AL560642, F27195, AL095409, AA804683, AL857391, AL676012, AA182619, N30675, AL000845, AL660588, R54410, AA081362, AL129527, AW023019, AA516100, AA528581, AA729056, AL053881, AA658829, AW328662, AW411459, AW276534, AA569578, AA484708, AA465665, AA809081, AL971289, AW245982, AA327606, D53168, AW238115, AW262461, AW238188, AW274800, AW238174, AW438505, T59573, AL521361, AL658587, AA602702, AL199869, AA859568, AW084835, AW006070, AL266606, AW327994, AA176964, AW238047, AW262180, AA551487, AL167322, AW328642, AW328735, AW327769, and AC005291.
HTW/JC85	6319	757125	1 - 321	15 - 335	AL141508.
HTW/JF59	6320	693116	1 - 348	15 - 362	AC004534, and AC004889.
HTW/JF66	6321	576164	1 - 589	15 - 603	AA525704, AW167154, AA507601, AL887235, AL815583, M62259, F24745, AL816537.
HTW/JF95	6322	745182	1 - 431	15 - 445	

<p>             AI797998, AI627917, AA558366, AI421257, AI049630, AA279919, AI038304, AI243789, AI077941, AI049955, AA382181, AA343523, AI249688, AA127222, AI0347203, AA084609, AA070607, N71033, AI915081, AA730530, AA502991, AI039257, AA557790, H050666, AI570067, AA218684, AW069769, AA084320, AA331311, AI249365, AI434477, AA648560, T47138, AI859280, AI079734, AA470933, R95751, AA985202, AW337805, AA573962, AA230025, AW188742, AA527633, N39388, AI891043, AI524022, AA468505, AA535537, AA491767, AW239465, AW439724, AW176639, AA669054, AA196994, AI679413, AA468371, AA689351, AI502532, AI754567, AI569100, AW192599, AI564582, AI031759, AA661583, AI598003, AI847341, AA171400, AA055647, AI919048, AI587826, AI733523, AI268465, CO5999, AW408073, AI755214, H86221, AA578832, AA387826, AI733523, AI268465, CO5999, AA714110, AI918661, AI567676, AA640305, AA740571, R81017, AA741403, AI452836, AA102737, AI754105, AP62030, AW131356, H68343, AW303052, AI884404, AA678845, AA297498, R24038, AA605243, AI336771, AA493245, AA283368, AW337454, AA935457, AA748071, W96277, H71678, AI802087, AI080307, N99564, AW338376, AW129188, AA837035, AA593828, AI754653, AW021399, AA807704, AW020094, H85383, AI210555, N25079, AA679523, AI882257, F35097, AA586667, AI589942, W45306, F04710, AI74827, TI5873, AA128511, AI890297, AA809546, AI801563, AI065031, AA630854, R22966, AW117860, AA367672, AA668777, N63149, AI601229, AA229422, H57732, AI984168, R89560, R97294, AI732474, AA524617, AA524907, AI237776, AA524666, AI791427, AI340151, AI732655, AA395661, AA729755, AI732128, F02399, AA387835, AA452325, AI049701, AA523719, Z96182, AC005102, AI096791, AC004962, AC006088, AC003808, AC006211, B34294, AC005911, AI049869, AP000952, AC008044, AC006064, S42653, U89337, AC005516, AC004854, AC004230, AC007193, AP000065, Z93930, AC005288, AI031311, AC002301, AI049795, AP000032, D86995, AP000343, AC006571, U95742, AC004841, AC006539, AI049829, AI080243, AC008078, Z83844, AC005089, AC004832, AC007216, AF196971, AP001115, AI109952, AP001052, AI049569, AI135744, Z96074, AC006077, AP001033, AP000555, AI109984, AC005015, AC004916, AC002312, AI035659, AI034421, AF001549, AP000359, AC004033, AI023575, M17262, AF124523, AC006948, AC007308, AP000089, AC007546, AC007686, AC000353, AC005866, Z97034, AF134726, AC007226, AC004146, AC007436, AC004477, AC004929, AI031295, AC002470, AI023553, AC008014, AI033392, D87675, AC005484, AF196969, AC007688, AC009247, Z93023, AI132777, AI031296, U52111, AC002347, AI031848, Z95113, AC002477, AC010168, AP000047, AI031291, AI035037, AC006960, AF190465, AI031120, AI031281, AC003104, U91326, AC003042, AI139054, AP000305, AC005619, AC004999, AC002430, AC007384, AC007790, AP000113, AI109963, AI133246, AC005751, Z97056, AC005412, AP000252, AI020997, AC009516, Z82244, AC004797, AC005943, AC007371, AC006125, AC005291, AC006241, AP000212, AI035405, Z99716, AC004686, Y14768, AC007151, Z99943, AC006965, AC005940, L78833, AC004228, </p>				
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HTW/JH57	6323	812698	1 - 342	15 - 356	AL061313, AA351798, AW022796, AA743968, T61477, AL636734, AA604831, AL271762, AL054418, AA598605, AL538236, AA573000, N51140, H57752, AW002330, AA857812, R33091, AA228979, AA229823, F17537, AA402609, AW268322, AA828860, AW069227, AL041375, AL472736, AW341955, AA584765, AA077619, AL889579, AA626829, AL679759, AL886736, AL052776, AL188390, AL249365, AL082353, AW265279, AW265276, AL340700, AA084148, AL042735, AW339422, AW440568, AL354333, AL251944, AA342238, AA516025, R99533, F35684, AA515921, AL445573, AA450652, AL250552, AL251034, AL254770, AL284543, AL264579, AW765688, AA54090, AL133514, AL0969630, AL634187, AL246061, AW081610, AW271917, AW265688, AA568204, AA570740, AA483606, AA302812, AL457313, AA480486, AA558404, AA469230, AA371410, AA302978, F17700, AA502825, T03928, F30251, AL120141, AA557982, AL189682, D51877, AW265359, AA715983, AA135988, AW237905, AL271731, AA715962, AA599080, AW242031, AL889995, AA483583, AL114733, AL133552, T94072, AL251284, AL251203, AW273201, AW273146, AL273626, AL249853, AL251241, AW340905, AA468494, AA581525, AL046519, AL049534, AW301483, Z98884, AL022316, AC004041, AL035086, AL009181, AC005046, AL005996, AL121603, AC005060, AL031120, AC004253, AC000353, AC005102, AP000502, AL031733, AC004895, X87344, AC005180, AL031290, Y10196, AL080243, AC005089, AC005828, AC005031, AF196969, AP001549, AC004922, U95740, U91326, AC002300, AC004757, AC002316, AC005264, AC002312, AC007546, AC005685, AC004859, AC005962, AL049569, AC002038, AL009031, AC002326, AC005730, Z75888, AC006960, AC020663, AL049776, AC004534, AC004769, AF064861, AC006211, AC001228, AC002550, AF107104, AC005544, AC006241, AC003029, AL033376, AF000279, AC006141, Z77852, AP000691, AC003684, AC004383, AC004887, AP000106, AP000338,



HTWJL91 HTWJN03	6324	789487	1 - 533	15 - 547	AC007387, Z75887, AL122020, AF019413, AC002307, Z95114, AC006966, AC004933, AL049869, AL035071, AL031685, AF129756, AC002544, AC004878, AL031005, AC007225, AC005053, AC006014, AC005871, AC011456, L77570, AC002350, AC004841, AC000379, AC005339, AL020995, AL131163, AC005295, AL035209, AF134726, AC006449, AC000792, AL035387, AF176315, AC005071, AL121694, AC008151, AL109952, AP000131, AP002029, AF034555, AC004938, AC004071, AC002549, AC007298, AC006064, AL031577, AL121653, AC004000, U80017, AC006965, AL096701, AF015416, AP000248, AC006511, AL096805, AL035462, AL121658, AC007687, AL049697, AP000014, AP006944, AC005325, AL096035, AC002477, AC005081, Z98036, AL133246, AC007283, AC002430, AL096755, Z83851, Z86090, AP000342, AC006146, AL050348, AC004821, AC006044, AL079295, AL133245, AP000223, AP000355, AC005406, AC007384, AC004531, AC002425, AC007036, AL139054, AC004953, AL049636, AC006270, AL109627, AP000504, AC005380, AL008634, AL049709, AL246003, AL034351, AD001502, AL078472, AL035684, AL034423, AC008044, AC002565, Z88756, AL031728, AC005924, AL049856, AC007226, AP000104, AC006084, U80459, AC005913, AC004967, AB003151, AP000688, AC005516, AL030996, AC000003, AL022165, AC006160, AC002089, AC005288, U47924, AL031295, AC005520, AL034418, AC007450, AC002070, AC005484, AC005874, AF134471, AC006538, AC002112, AC007285, U91321, AC005358, AL031433, AC005832, AC005041, AC016831, AL050350, AC005370, AC005694, AL096816, AC006581, AC003080, AL031729, AP006501, AL132712, AC005049, Z98941, AC004985, AL034395, AC005037, AC004130, AC009516, AP000208, AP000130, AF015262, M80651, AL034400, AC005577, AC005704, AC004019, AC005696, AP000114, AP000046, Z98047, AC002551, D87009, B34294, AL229043, AC005666, AC003663, AC005200, AC007880, AC005915, and AC004491.
	6325	850055	1 - 403	15 - 417	
HTWJL91 HTWJN03	6324	789487	1 - 533	15 - 547	N91175, AA608935, and AL918281. AA649642, AA652057, AA441788, AL653905, F25867, F16274, AW088038, AL352078, AA601892, AA493170, AA095511, AA947370, AA553465, AA371567, AW265253, AW236342, AA649705, AA125788, AL110770, AW341900, AL076616, AA195545, AA364429, AL284640, AL281881, H78195, AA578391, AW089322, AA347927, AA347930, AA845813, W95841, AA355281, AA847741, AA917683, AV406447, AA808928, F34510, AL281903, R13151, AL282336, AA632837, AA831375, AL346095, AA381858, AA229785, AL325609, AL246796, W79504, AL709365, AF173891, AA352803, AA634238, AA551552, AL179792, AA51201, AP000555, Y18000, AC005529, AL035438, AF017257, AC004638, AC001192, AF227310, AC005694, AP000141, AC004685, AC005991, AL121653, AC005015, AL035415, AC006480, AL022238, AC005209, AC003101, AC005940, AC010170, AC004854, AC002330, AC002300, AF111168, AL096701, AC008039, U95740, AC006040, AC006468, AC005081, AF130247, AC005899, AF130342, AC008055, Z82189, AC005295, AL049834, AL034402, D87675, AP000459, AL121652, AL251973, AC004167, AL049835, AL109654, AL031666, AC008079,
	6325	850055	1 - 403	15 - 417	

				AC004967, AC006581, AC005414, AC006373, AL021937, AL109984, AC003035, AL025553, AC006543, AC008041, AC004799, Z82198, AC006538, AL023807, U02066, AC004659, AC004016, AC008101, AC005799, AC006432, AC006596, AL031577, AC004076, AC005324, AC005699, AC007387, AC007227, AC004474, AC003049, Z99716, AC007207, AC006207, AL008715, AC005829, AC005018, AF001552, U95743, AC005754, AL031774, AC004242, AJZ29041, AC005915, AF000115, AC011421, AC002558, AP001111, AP000043, AL133371, AC004894, AC007386, AC002457, Z84476, AC006544, AC010205, AC002492, AC006511, AC004875, AC002365, AB023056, AC006111, AC005031, AP000959, AC007917, AP000359, AC005696, AL096791, AC006487, AC007073, AL034554, AL121757, AF178030, AC007684, AC002432, AL021154, AP000955, AL035417, AC006011, AC007298, AC005821, N87917, AL031905, AC006070, AC003071, AC004796, AC002485, AF117829, AC018359, AL004979, AC009464, AC005154, AC005003, AL034549, AC004592, AL035422, Z85987, AC002543, AF205388, AB000660, Z95114, AC005251, AC002480, AP000238, AC004861, AC005043, AC006343, U80017, AC005053, AC005342, AC005548, AP00517, AC000120, AL031650, AL031311, AL033521, AC005922, U07000, Z84484, AL031387, AF200465, AL034451, AC007462, Z72519, AC006996, AC004925, L44140, U91321, AC006079, AC005166, AC004388, AC005905, AL022318, AC003682, AC005544, AC004613, AC007055, AC005381, AL031542, AL049869, AC005412, AC003682, AC005544, AC004947, U14689, AC007488, AC004690, AC007429, AL133241, AC004056, AC005229, AF093117, AB000882, AL031053, AL031295, AC004905, AL121603, and AC007057.
HTWJ045	6326	717592	1 - 179	15 - 193
HTWJ019	6327	668466	1 - 329	15 - 343
HTWJY82	6328	698335	1 - 116	15 - 130
HTWKJ30	6329	691882	1 - 125	15 - 139
HTWKNS3	6330	728014	1 - 256	15 - 270
HTWKTK61	6331	709451	1 - 104	15 - 118
HTWKX27	6332	574092	1 - 423	15 - 437
				T95930, F16108, AW023111, AL870453, AA225406, AW272294, AL858889, AL635028, AA224593, AL567391, AA493947, AL923451, AL587467, AL192440, AL628859, AL860751, AA297011, AL572680, AW168103, AA077619, AL923458, AL120004, AL127649, AA98390, AA384890, AA358404, AA225938, AA722336, AA551056, AL439393, AA425924, AW105737, AA526643, AA320105, AA663074, AA612727, AA470578, N25564, AA904211, W81372, AA650447, AL358712, N36994, AL609972, AA487300, AL798407, AL121257, AA309634, AL792439, N95156, AA570441, F17537, AW162227, AW157731, H58891, C06142, AA598736, AC005037, AC005920, AL008635, AL003685, AC003687, Z98200, AL121652, AC006515, AC007676, AL035071, AC005531, AC007707, AL031311, AC006660, Z84469, AF128825, AL096763, Z86090, AL020997, AC005318, U91321, AC007993, U96629, AL049776, AC007688, AC007236, AL135783, AL031665, AC006020, AL109758, AC005488, AC006449, AC007225,

HTWKZ04	6333	614980	1 - 430	15 - 444	AL021393, AC007182, AL045684, AL049795, AC008009, U91322, AC005887, AC005412, AL024507, AC003874, AF134471, AJ229042, AC003663, AL133396, AC003109, AC000353, D42052, AC004067, AC002312, AC006312, AC005002, AC005800, U91318, X76498, U73643, AL049643, Z97632, AL050308, AC003041, AL050321, AC004605, AC005666, AL035400, AC005220, Z85996, AL023513, AC005790, AL033568, AL109963, AC005335, AC004966, AC007437, AL031447, Z95115, AC006599, AC004655, AC005516, AL049761, Z68277, AL034379, AL049745, AC006120, Z97196, AC002994, AL021578, AC006211, AL022323, AC003550, AC004858, AC006347, AL049872, Z95116, AL096791, AF030453, AF029306, AL031055, AC004927, AC004104, AL109863, AC003015, AL009051, AC007066, AC007731, AC005300, AL121603, AL049794, AC009509, AC004883, AL122023, AF000113, AP000045, U82668, AC005156, AC004859, AL049766, Z83822, Z98044, AP000288, AF000109, AP000041, AC005342, AL033527, AC006254, AC005235, AF001548, AC004813, AC004801, AL021392, AC005803, AF053356, AL049743, AP000355, AC002542, AC002988, AC005777, AC005255, AC002314, AL031767, AL136504, AL049198, AC004900, L78833, AL034400, AC005921, AC008134, AC002347, AC006006, AC004084, AC004973, J011930, X87344, AC004009, AC007685, AC005971, AC005179, AC005088, AC002176, AC008015, AL049839, AC007057, AC004491, AC006450, AC004760, AC006337, Z99289, AC005304, AP000053, AL033376, U95743, AC009516, AL035703, AC004953, AC003512, AC009363, AC002385, AF004861, AC007686, AC003957, AL109759, Z98946, AB000660, AB000563, AL049591, AF196972, AC005011, AC003683, AF003626, AL049869, AL049712, AC005207, AL050320, AF031076, AL031651, AC016026, AF031078, AF030876, AC006111, AL133485, AL035681, AF038458, AC003083, AC004253, AF149773, X53448, AL096767, AC004938, AC005154, AC007842, L44140, Z84466, Z82205, AC002369, AC004100, AL034376, AL121757, AC003010, AC004887, AC005899, AL033392, AL035423, AC005660, U91326, AC002544, AC005180, AC004805, AP000295, M57965, AP000700, U89335, AC005355, Z83823, AC004098, and AC006065.
HTWKZ17	6334	529749	1 - 351	15 - 365	
HTWLD37	6335	841951	1 - 491	15 - 505	
HTWLG13	6336	656772	1 - 325	15 - 339	
HTWLG76	6337	795694	1 - 527	15 - 541	AL045209, AL138331, AL080135, and AC004810. AL126506, AL200037, AW020616, AW450603, AL695490, N26904, A1217597, AL829099, AA568193, AA605122, AA743134, AL160533, AL128843, N25625, N24885, A1312534, AL802647, AA648514, AA729493, AL219599, AA806507, H86995, AA729125, AA568681, N36303, AL032141, N34223, AA768761, N35103, N26781, R73137, AW298649, N25653, AA543074, W52651, AW453038, AL674252, AW452862, AL988539, AA296449, N28403, AW074182, AL805445, AW236299, AL301669, AL299683, AL452444, AL039557, AL141901, R26304, N72137, AL984739, N34254, AA358828, AA653691, N20053, N39790, H86994, and W00385.

HTXAK52	6338	869460	1 - 251	15 - 265	
HTXAK78	6339	530137	1 - 335	15 - 349	
HTXAO23	6340	676386	1 - 119	15 - 133	
HTXBF75	6341	963029	1 - 312	15 - 326	AC008039.
HTXBH24	6342	418592	1 - 231	15 - 245	
HTXBH36	6343	529759	1 - 219	15 - 233	
HTXBH92	6344	706472	1 - 492	15 - 506	AA694368, A076400, A1911488, and AL135744.
HTXBK75	6345	869401	1 - 159	15 - 173	AC004472.
HTXBH83	6346	781443	1 - 236	15 - 250	N28694, and AL049779.
HTXB011	6347	967750	1 - 387	15 - 401	AC012627.
HTXB021	6348	869461	1 - 320	15 - 334	Z77852.
HTXB051	6349	970855	1 - 726	15 - 740	AA954908, AA234392, AA554743, AA232663, AA641221, and AW029502.
HTXB349	6350	529662	1 - 225	15 - 239	
HTXB377	6351	529661	1 - 341	15 - 355	
HTXC32	6352	529615	1 - 431	15 - 445	AA134057, W60233, X81403, AF008203, and U96109.
HTXCL28	6353	952022	1 - 165	15 - 179	AC005730.
HTXCW76	6354	765655	1 - 576	15 - 590	AA213831, AC002472, and AC007664.
HTXCW16	6355	522365	1 - 253	15 - 267	AL021393.
HTXCW27	6356	491257	1 - 564	15 - 578	
HTXCX05	6357	932476	1 - 289	15 - 303	
HTXCX16	6358	537413	1 - 219	15 - 233	
HTXCX84	6359	924996	1 - 229	15 - 243	
HTXC216	6360	537485	1 - 439	15 - 453	
HTXD037	6361	968886	1 - 552	15 - 566	N92159.
					AI693917, AW295593, AA831020, AW302412, AA976179, AA765705, AA731457, AA350911, AA810783, AA732410, AA928152, AW304453, AA906028, and A1695679.
HTXD151	6362	537474	1 - 262	15 - 276	
HTXD050	6363	537487	1 - 426	15 - 440	
HTXDQ25	6364	869369	1 - 365	15 - 379	
HTXD580	6365	869433	1 - 70	15 - 84	
HTXDW14	6366	966588	1 - 1237	15 - 1251	AI829096, AA642981, AW152343, AW251072, AI871224, AW071985, AI978921, AI623713, AI762266, AI677795, AW117876, AI494363, AW009386, AI677747, AA458937, AA593002, AI660303, TS7200, AA236101, AA653968, AA889703, AI633328, AI566555, AI568693, W49620, AI129215, AA725435, AW072937, AI424429, AI686112, AI659610, W48794, AA903402, AW407304, AA676879, AO27201, TS5953, AI220314, AI538498, AI084808, AW009784, AA235819, H62064, A W083416, A W087223, A W068082, AA121077, AA084809, H45963, AI650521, AO27200, AA459151, H61158, AA399478, AA293409, AA459441, and AI918169.

HTXD61	6367	784768	1 - 411	15 - 425	AW403861, AW408474, and AI 023755; AC004895, AL096791, AC006023, AL049758, AC005837, AL031651, and AC004834.
HTXD82	6368	931113	1 - 552	15 - 566	
HTXDZ01	6369	921486	1 - 301	15 - 315	
HTXEA41	6370	974530	1 - 408	15 - 422	T78301, and AL022328.
HTXEA62	6371	812833	1 - 372	15 - 386	AW405413, AA333813, and AA381548.
HTXEC53	6372	529755	1 - 500	15 - 514	AA176859.
HTXEE70	6373	537403	1 - 272	15 - 286	
HTXEM54	6374	704221	1 - 455	15 - 469	AI936768, AI336580, AI143875, AI445933, AI623391, AI091508, AI016436, AA843275, AI634953, AI097033, AI343882, AW383962, H59109, AI923443, AA430386, AI127186, AI343898, AI075102, N92435, AI950068, AW009389, H45798, AW162266, AA749379, AA421159, W52668, AA557505, AA397847, C05210, AA975241, AI420624, AA746044, N94429, N71146, N41774, AA680312, H72570, R81293, T81890, AI074236, AA405255, H65279, AA514243, AA448899, AA838218, AI815068, AW152092, AI160804, AA935048, AA284883, AI816986, AI380091, AA041377, AI047256, AA931271, AI278531, AI074208, AA287368, AA653509, AA873636, AA477128, AI367990, R89302, AI808213, AA855323, AA126677, AA464570, F55772, AI817348, AI744978, AA832261, AA612964, AA708347, AA659795, AI346987, AI720049, AW044578, AW172820, AA388835, AI653843, AA081185, AA477374, AI298000, AW071157, T30155, AA039332, F25719, AW003379, W74217, AI934851, AA436429, AA427865, AA806434, N32773, AA287506, AA429288, AA081295, W15647, AA083871, AA568365, AA129242, AA476577, AA489518, AI200308, AI364059, AA284614, R33178, AA954681, AW190970, AI241959, W30776, AA652668, AW328731, R82993, T83974, AA868075, AA385487, AA592907, AA464673, W52667, AA832337, AA129279, C05561, AW291918, AI459882, AA761016, AW301144, AA483524, AA678902, AI016411, W42678, AI383729, AA489517, T58548, AA368569, N70036, R89303, AA411549, AA041417, AI014648, AI279385, AW050747, R37644, R81187, R53087, AA039417, AW448949, N80829, H78214, H72970, AA127289, AI208609, AI386232, W44978, AI420322, W79938, AW089501, N41749, R24418, AI471390, AI219019, C01008, T51008, AI379130, AA291664, AI019116, and AC005688.
HTXEP20	6375	537483	1 - 227	15 - 241	
HTXEP49	6376	722181	1 - 387	15 - 401	AA167183, AA481795, and AC005837.
HTXEP76	6377	527697	1 - 352	15 - 366	
HTXEQ05	6378	932471	1 - 223	15 - 237	
HTXET61	6379	537471	1 - 233	15 - 247	
HTXET67	6380	783784	1 - 275	15 - 289	
HTXET75	6381	664468	1 - 222	15 - 236	AC005630, and AC006328.
HTXEW14	6382	932437	1 - 206	15 - 220	

HTXFB03	6383	924995	1 - 304	15 - 318	
HTXFB78	6384	869408	1 - 272	15 - 286	
HTXFB95	6385	537399	1 - 320	15 - 334	
HTXFC07	6386	918644	1 - 594	15 - 608	AL241496.
HTXFD75	6387	537401	1 - 254	15 - 268	
HTXFE47	6388	790855	1 - 452	15 - 466	
HTXFF04	6389	615593	1 - 641	15 - 655	R99264.
HTXFF66	6390	973429	1 - 723	15 - 737	
HTXFF91	6391	780083	1 - 347	15 - 361	
HTXFI58	6392	557838	1 - 314	15 - 328	AW051648, AC002349, AC005040, AC006975, AC004131, AB020874, AC005243, AL109941, AL031393, AC006536, AC006062, AC002460, AF156545, AC006516, and AP000080.
HTXFK45	6393	523385	1 - 387	15 - 401	
HTXFN69	6394	869397	1 - 463	15 - 477	
HTXFO65	6395	926534	1 - 569	15 - 583	
HTXFS95	6396	796025	1 - 328	15 - 342	
AA084950, AL036549, T03401, AA558426, AA526343, AA009835, AA192293, AL048376, H38817, AL469384, T07225, AA303598, AA226770, AA642809, AA640310, AA745373, W02437, R48980, AW087226, AC020663, AB026906, U91320, AC005197, AP000011, Z98052, AC002425, AC007731, AC005500, AP000510, AC008115, AP0000268, AP000102, AP000033, AC005535, AB023048, AC007226, Z93020, AP000563, AL022721, AC002310, AC005971, Z99716, M33132, AC006001, AC004765, AL033392, AP000133, AP000211, L44140, AC005837, Z99716, M33132, AF050154, AL049780, AC006544, AL030321, AL080243, AC007055, AF111167, AC005399, AL009181, AL021939, AC003108, Z93017, AL031602, AC002350, Z98750, AL096703, AC002546, AC005944, Z93241, AC002344, AC006948, AD000092, AC005280, AL003147, AC007276, AC003083, AC005763, AC006571, AC005932, AC005652, AC006121, AC002477, AC004686, Z83826, AL034451, AC003109, AC005519, AC005071, Z98200, AL035684, AL031311, AP000212, AP000134, AP000030, AF030876, AC005360, AL021546, AC007676, AC005529, AL023575, AL133371, AC006023, AP000345, AC006125, Z69707, AC009247, AL133445, AP000088, AF031075, AC002094, AC003983, AC005940, AC006539, X55448, AL109827, AC004910, U91326, AC007462, AC002395, AL031662, AC002400, AC007057, AB020861, AC005049, AL035587, AL023880, Z98941, AC005291, AC005262, AC016831, AL117694, U63721, AP000555, M15366, AL121748, AC004583, AC007686, AC007114, AC005764, AC005902, AC005225, AC009516, AC003950, AC005531, U78027, AC005527, AL021977, AL021918, Z69042, AC008041, AL050318, AL022323, AL035464, AC005015, AP005553, AC003962, AL035422, AC005772, AL031848, AC003043, AC015853, AC003025, AC004596, AL009191, AC006791, AC007919, U91318, AC007283, AP000269, AC005033, Z99943, AC008040, AC006449, AC003072, U91323, Z97181, AC004659, AC004024, AP000032,					

HTXFT03	6397	994952	1 - 87	15 - 101	A P000103, AC007229, and AC006509.
HTXFT60	6398	973937	1 - 343	15 - 357	U61375.
HTXFT60	6399	537491	1 - 331	15 - 345	AC005057, and AF045555.
HTXFB22	6400	933878	1 - 86	15 - 100	AL034375.
HTXGB20	6401	577711	1 - 650	15 - 664	AA084084.
HTXGB65	6402	529724	1 - 173	15 - 187	
HTXGD30	6403	529724	1 - 229	15 - 243	
HTXGL73	6403	529745	1 - 487	15 - 501	AL148063, AA252523, AA297161, F12840, T74733, AT165490, and AL050283.
HTXGN76	6404	527016	1 - 487	15 - 501	
HTXGO74	6405	869391	1 - 70	15 - 84	
HTXGO37	6406	575461	1 - 308	15 - 322	
HTXHA16	6407	661818	1 - 421	15 - 435	AA362857, R82020, R82878, and AA229827.
HTXHD24	6408	727469	1 - 266	15 - 280	N40823, AA366086, W42954, R70423, AA252002, AA306794, AA524713, AW345923, AA210862, AA093155, AA281810, R52220, N35269, AA258914, W57948, and A W328480.
HTXJA66	6409	698461	1 - 391	15 - 405	Z99716.
HTXJB15	6410	660059	1 - 301	15 - 315	
HTXJB35	6411	707768	1 - 342	15 - 356	T48959
HTXJC65	6412	665655	1 - 310	15 - 324	AT164902, and AA665393.
HTXJE76	6413	745813	1 - 305	15 - 319	AL135243.
HTXJF30	6414	692607	1 - 442	15 - 456	AA834596.
HTXJG06	6415	933230	1 - 516	15 - 530	Z84483, AL022151, and AC004456.
HTXJG19	6416	974010	1 - 355	15 - 369	
HTXJG23	6417	675315	1 - 521	15 - 535	
HTXJG53	6418	752160	1 - 1038	15 - 1052	AL134541, H41086, R33553, H42427, AW374362, AW374429, AW374421, AW374386, AW374746, AT143773, AW189062, AT143778, and D80002.
HTXJH73	6419	582143	1 - 357	15 - 371	T03401, AW340825, AL679753, and AL446158.
HTXJK23	6420	912611	1 - 541	15 - 555	AT29622, AW166374, N62687, AT698163, AT808675, AT499009, AW085191, AW025963, AT155143, AA781965, AT937942, AA778160, AT928943, AW157001, W84345, AW368475, AW275950, R99189, AW275930, AA006459, AT697616, AA905632, AT142546, AW703929, AA226492, AW157319, AA018804, AA084374, AA488608, AT879125, R99188, H80954, W84318, AA088853, H09853, T57108, AA221003, N39466, T11251, AW369155, AT738969, AW452770, AA045453, AA214461, AA149728, N36179, H80858, AL045542, AT470608, AA149794, N44167, AW069420, AA377776, AW237362, R78054, F00825, AA310214, AF112206, AF152463, AF203689, and M83680.
HTXJL55	6421	959169	1 - 377	15 - 391	
HTXJK23	6422	675782	1 - 424	15 - 438	

HTXJL01	6423	916254	1 - 732	15 - 746	AA411753.
HTXJL02	6424	916691	1 - 469	15 - 483	AA436940, AI884861, W00387, AA488308, T50025, F35684, AA502125, AA587812, AA513219, AI031287, AL034562, AI031133, AL031729, AC007540, AB007960, AC005681, AF134726, AC005480, AL035072, AL132777, AC005740, Y10196, and Z82189.
HTXJMW73	6425	783572	1 - 387	15 - 401	AC005562.
HTXJUN04	6426	566887	1 - 1574	15 - 1588	AI278972, AI355007, AA613761, AW089589, AI476049, AA644090, AI254779, AA084609, AA833896, AA833875, AW320017, AA613624, AW007662, AI732720, AI061313, AA077737, AI047429, AW150226, AI249473, AI734119, TS7767, AA077637, AW169038, AI049534, AI891070, AI487209, AI096712, AC005519, AC004000, AC005620, AF001549, AC006121, AI246003, AI122020, AC005377, AC004816, AC006064, AL080243, AC004797, AI133245, AC005231, Z85986, AC005225, AC004821, AC007226, AL031311, Z93241, AC005736, AI035420, AC006958, AC002303, U85195, AC007917, AP000503, AL031284, AC002376, AC003982, AI121658, AF111168, AF196779, AC005859, AE000658, AC005755, AC003776, AC005837, AI096791, AL020993, AI139054, AF053356, AC006480, AC004596, AC005921, AL020995, AC006312, AC003101, AC005863, AC006530, AC007999, AL035685, Z84469, AC005829, AC005261, Z86090, Z98036, AP000133, AP000211, AC005004, AC000026, AC004491, AC005300, AL117330, AP000553, AL050307, AC005057, U62293, AC002059, Z99716, AC005339, AP000555, AL031281, AL117337, Z94801, AF220465, AC007216, AC005102, AL035683, AC002369, AL035086, AC005488, AI109627, AC016025, AC006388, AC007845, AC007993, AC005399, AL031588, AC004799, AC008151, AL035659, Z93017, AC005206, AC004686, U95742, AC005514, AL031005, AC004876, Z95152, AC007686, AC004217, AC002350, AF196971, AC005971, U93305, AC006211, AC006124, AF11167, AC004106, AC004841, AC004659, AC005015, AF038458, AL117258, AC004584, Z97876, AF176815, AC002996, AC002470, AC004991, AC006071, AC006050, Z98051, AL022237, AL022320, AF205588, AL031186, AL049839, AC005529, AC004883, U62317, AC005037, AC007537, AC005632, AC007774, AL024498, AC000052, AC005567, AC006381, AC006080, AC005527, AC004084, AC006571, AC002425, AC006013, AC005920, AP000330, Z15025, AC004099, AL031774, AC005280, AC005670, Z84480, AF134726, AI109984, AC004598, AC004382, AC005081, U91321, U93335, AC002300, AB023049, AC005291, AC004598, AL022238, AC004805, AC004895, U96629, AP000694, Z85987, AF010238, AC005089, AI109801, Z97056, AP000201, AL035400, AP000513, AC004408, AC004851, AL121655, Z84466, AC002551, AC002312, AC005391, AL049757, AI132712, AL035079, AC00386, AC005379, AP001052, Z98941, AC012384, AC006615, AI121603, AF109907, AI135744, AC005031, AL050321, AF064861, AL031685, AL022315, AC009247, AC007030, AL031680, AC005778, AC002314, AC007536, AC004520, AL021154, AC005005, AC005821, AC003731, AC005581, AP000097, AL031683, AL031602, AC000353, AF047825, AC009516, AC006030, AP000117, AL049795, AL023553, AF190465, AP000557, AL031651, AP000299,



HTXJN68	6427	752940	1 - 362	15 - 376	AL133445, AC008040, AL096701, AC002543, AL049758, AC006544, AC002544, AC004913, AC007055, AL031447, and AC004231.
HTXJO34	6428	703973	1 - 216	15 - 230	AW401809.
HTXJO61	6429	663153	1 - 535	15 - 549	U73636.
HTXJO85	6430	869123	1 - 575	15 - 589	AA634244.
HTXJP28	6431	974315	1 - 601	15 - 615	AC002303.
HTXJQ73	6432	719077	1 - 539	15 - 553	
HTXJR67	6433	739586	1 - 168	15 - 182	
HTXJSG4	6434	746481	1 - 589	15 - 603	
HTXJIV49	6435	867083	1 - 852	15 - 866	AW005663, AW071763, AL1589576, AL421189, AL073924, AL421482, AL417338, AL885651, AL129633, AW206726, AL374763, AL251156, AL138654, AL198796, AL278638, AL865555, AL201794, ALW45078, AL675781, AL078333, AL283026, AL4550952, AW005870, AW001162, AL4782579, AL040632, H09745, AL4223086, AL2646209, AL931459, W73383, AL124006, D60111, AL602382, AL133736, AL2556089, T796314, AL269716, W73444, AL284851, AL7843306, AL931501, AL198032, AA863002, N921173, H09833, C14754, AA206562, AA830231, AL128560, T79716, AA137289, AW169019, and AC007637.
HTXJW56	6436	839854	1 - 466	15 - 480	AL031005.
HTXJY51	6437	872233	1 - 259	15 - 273	AL219169, F24728, AA714011, AL460009, AA484164, AA583394, AA584125, AA4833896, AC008645, AA833875, AA084609, R60935, AL273847, AA228459, AL561210, M87890, AC004859, AP000251, AL031311, AP000212, AP00030, AP000134, AC005228, AC004383, SA6552, AL00022313, AL0272322, AC007216, AP000501, Z82203, AL0335387, AC0050589, AL78406, AC004150, AC005037, AL033563, AL0209977, AC005694, AL021407, AC005529, AC002544, AC005207, AC005088, U52112, AL031295, AC004801, AC005081, AC005971, Z85996, AC004662, AL133163, AC009044, AC004817, AC005320, AL049569, AL020995, AC005015, AC006057, AC005913, AC004832, AC005837, AC004477, AC000029, AC002059, AL049836, AC004929, Z97353, AC005476, AC006449, AF030453, AL096791, AC008044, AL035530, AL080243, AL049276, AC002310, AC005914, AL049636, AC002364, AC004139, AL008726, AL049779, AC004263, AL031680, AC009721, Y12855, AL133245, AC006050, AC009516, AC005257, AC002425, AC007129, AC000120, Z93928, AC004659, AC004883, AC005484, AF038458, AL121633, AC004834, AL135744, Z98946, AC002543, AC007676, Z97196, AC005346, AL024507, AC005225, AC005190, AL034402, AL133353, AC0066254, AC005324, AC007298, AL096701, Z86090, AL034420, AL031984, AL1109984, AC006639, AP000299, AC002994, I59642, AC007435, AC004216, AC002519, AF196969, AC00582, AC000299, AC006441, AC016025, AC004000, AL121603, AC005696, Z95116, W78027, U52111, AC004805, AC007198, AC005668, AF031078, AC002076, AC005899, AC005839, AC004598.
HTXKB42	6438	841986	1 - 348	15 - 362	

HTXK23	6439	529756	1 - 229	15 - 243	295114, Z98257, AC005800, AF030876, AC008041, AC006088, L39891, AC007993, AC006050, AC005274, AC003377, U91326, AL022316, AC004851, AC003010, AB023048, AC006480, AL049839, AC003011, AC004686, AC000026, AC004955, AC006948, AL122020, AL008718, AC005568, AC005261, AC005184, AP000704, AC004985, AF045555, AC002352, Z98884, Z83838, AP001053, AL031666, AC004991, AJ003147, AL035659, AL035422, AL031667, AC007785, U96629, AC005740, AC006101, AC007388, AC004039, AL109798, AP000045, AP000113, AC006211, AP000691, AF053356, and Z70280.
HTXK23	6439	529756	1 - 229	15 - 243	
HTXK23	6440	743433	1 - 272	15 - 286	AC004242.
HTXK23	6441	720186	1 - 342	15 - 356	AL031774.
HTXK23	6442	796245	1 - 251	15 - 265	W04224, AA134651, AL036175, AW249082, AW410595, AB296097, AW162954, AW161591, W26888, AA339543, W00383, AA219343, and F12127.
HTXK23	6443	671285	1 - 503	15 - 517	AA531436.
HTXK23	6444	571285	1 - 570	15 - 584	AB002344.
HTXK23	6445	767234	1 - 373	15 - 387	
HTXK23	6446	795788	1 - 338	15 - 352	H83011, A973913, A1089968, A1088759, AW026427, AW071109, AA625565, AA334666, AL110391, A984920, H81181, R09127, R13548, A1090576, AA528641, R96693, AA782301, AW188869, AL187148, A W438662, AL570019, AW438850, T86740, N92157, AA991990, T98482, AA714930, AW073881, AL118625, AA302690, AL038963, AA489860, AA833828, AW022934, AW021161, AA491438, AA654212, AL134009, AA350595, AL134586, H90688, AL1336398, AA501781, T08205, AC007182, AF031076, AC004685, AL049795, AP000512, AL031774, AC004883, AF111167, AF031078, AL031905, AF030876, AL022316, AC000085, AC003109, AC006023, AL117258, AC005200, AL078596, AL008719, AL020997, AL031728, AF111168, AC005553, AL049538, L47334, AC005081, AC003982, AL035079, AC004832, Z75587, AC004987, AC007666, AC005803, AC006273, L44140, AL031283, AL078463, AC005067, AC007955, AL049832, AC004686, AC007425, AL109758, AC005102, AC002994, AC005071, AC005312, AC006241, AL031286, AL031729, AC002511, AC004216, AF111109, AL117354, AC004491, AC005288, AC004777, AF053356, Z94056, AC004382, AC006509, AL035410, AC004322, AC005187, AC005409, AL121748, AC008372, AC005527, AC006509, AL031230, AC002375, AC000079, AC005015, AL022238, AP003147, AL022336, AC004662, AL031230, AC002375, AC000079, AC002551, AP002210, AP001132, AC006037, AC000059, Z93930, AC005529, AC007473, AL133382, AC005520, AC004983, Z97989, AP000249, AC000052, AC005944, AL109627, AP000336, AL079342, AL034419, AC003026, AC002287, AC004990, L78744, AL031673, AC002530, AC005585, AC005899, AB023050, AL066801, AC003665, and AL050348.
HTXK23	6447	751050	1 - 423	15 - 437	AW339481, C04332, A3383551, and AC006449.
HTXK23	6448	664886	1 - 335	15 - 349	AL119878.
HTXK23	6449	762951	1 - 375	15 - 389	AL117354.

HTXKN90	6450	787351	1	316	15	330	HI0896, RG1720, H23341, and H29365.
HTXKP42	6451	713631	1	646	15	660	H01126, and AB018275.
HTXKQ25	6452	934801	1	574	15	588	AA029519, and AB001304.
HTXKR65	6453	941789	1	353	15	367	AC002096, AC007774, A1008718, AC005832, AP000093, AP000237, and AC004933.
HTXKS02	6454	919676	1	279	15	293	W47063, A1025911, AA401720, AA192887, and A1031295.
HTXKL69	6455	754404	1	479	15	503	298750.
HTXKVL6	6456	893348	1	490	15	504	
HTXKV38	6457	918567	1	755	15	769	
HTXKZ89	6458	786409	1	291	15	305	
HTXLA63	6459	917316	1	422	15	436	
HTXLD06	6460	934555	1	936	15	950	

HTXLD68	6461	752484	1 - 356	15 - 370	
					<p> 150132, 150128, 150133, A83396, AR066482, 119525, A44171, AR066488, AR016514, A83477, AR060138, A86792, A45456, A26615, AR052274, U87250, X93549, Y09669, A43190, A43190, AR038669, AR054175, AR066487, AR066490, A30438, 118367, 114842, D50010, Y17187, D88507, A63261, AR008277, AR008281, X64588, AR008408, I79511, AR062872, A70867, AR016691, AR016690, U46128, AFI13125, D13509, A64136, A68321, AR060133, U87247, U79457, AFI22263, AR033111, AR032065, AR060382, X93535, and AR008382. </p> <p> D51799, D59502, D80195, C14389, D80164, C13076, D80038, D59467, D59275, D80227, D81026, D80022, D58283, D80166, D80193, D59859, D59619, D80210, D80391, D80240, C14331, D59787, D51423, D81030, D80253, D80043, A1717440, A4305578, D80269, D80212, A3360811, D80196, D80188, D50979, D80219, A4514188, D80045, D59927, D57483, AA305409, D59610, D80378, D80366, D51022, D59889, D50995, D80024, T03269, D80248, A375405, A1779328, A177893, D80241, A4514186, C14429, D80522, D51060, D80251, C14014, D80133, A3360296, A378532, A377671, A3760844, A375406, A360817, A378534, A1779332, A377672, A1779023, A1778905, A177501, A177511, A377676, A1778762, D80302, A352170, A352170, A352170, D51250, C75259, A352171, A177731, A177875, A1778907, A1779019, A177505, A1779024, D80268, D80132, A352158, C03695, A1779020, A3760841, A1778909, A177456, A1779329, D80134, A3760841, A1778754, A1776467, A1778980, A1777733, A378528, A1778906, A1778908, A1779004, A1779012, D58253, D80439, A3732117, D80247, D59695, A3767967, F13647, D80064, A1779009, D80949, A1778774, A1778911, A378543, A3752163, D51103, D80168, T11417, D59503, C14227, A305856, A1778983, D81111, D80157, D58246, T48593, A1778781, A3760834, C14298, C14407, D51759, A378540, C14077, A177723, A352120, D59627, A177508, A378513, D80258, D51097, Z21582, D58101, A3767950, A3285331, A177497, C14975, D45260, D59317, A1778986, A1777734, H67866, A322923, H67854, T03116, C03092, A4809122, D80014, A1557751, D51213, D45273, A1535686, D59551, A1525917, C14973, A1525920, C14344, D51221, D59474, D60010, D60214, A4514184, A378542, A1525227, T03048, A378539, C14046, A1525928, A1527774, A1525233, A1525925, A152542, A3760855, T02868, A1525215, D59976, A1525912, A1535850, C16955, C05763, Z33452, T02974, A1525237, H67858, A3760846, A34916, A1332110, A62300, A62720, A1525912, A1525237, H67858, A3760846, A34916, A1332110, A62300, A62720, A1525912, A1525237, H67858, A3760846, A34916, A1332110, A62300, A62720, D89785, A78862, D34614, X67155, A82955, D88547, AR060385, A94995, X82626, AR002449, AR008443, 182448, AR016808, 150126, 150132, 150128, 150133, AR025207, AR016514, AR060138, A45456, A26615, AR052274, AR066488, AR066490, A43192, A43190, AR038669, 118367, Y09669, AR066487, A30438, A3012117, 114842, D50010, Y17187, A376261, A68127, A70867, AR054175, AR008408, AR062872, A85596, D88507, AR066482, A44171, A83477, 119525, AR062877, AR008281, A64136, A68321, X93549, AR016691, AR016690, </p>

HTXLE37	6462	790392	1 - 293	15 - 307	U46128, D13509, AR060133, I79511, AR032065, U79457, AF123263, AP000147, and AR008382.
HTXLE56	6463	861983	1 - 603	15 - 617	AA593263.
HTXLE73	6464	766798	1 - 657	15 - 671	AC002073.
HTXLE79	6465	774125	1 - 418	15 - 432	AP49292.
					AA321018, AF149306, AA078391, AB934548, AA317973, AA321148, AB90971, AF198136, AA032984, AF473090, AA938132, AA630245, AF751519, AA577719, AA345188, AA451326, AA282821, AA719817, N54128, AF671041, AA908595, AA601645, AA21976, AA614595, AA584148, AF570118, AA650183, AB11226, T97590, AA810374, AA018757, AW068020, AA657534, AW021154, AA599241, AP133707, D11859, AA676621, AL044177, M77895, AB69786, AA984543, H95286, AA442384, AW008231, AL044086, AB211188, AS583677, N94258, T06876, AL133163, AC007666, AC000052, AC004019, AL109627, AC006208, Z97054, AC009275, AC008154, AL0033379, AC008124, AC005164, AL031427, AC005027, AL118497, AC000395, AF139813, AC005049, AP000269, AC006048, AL118510, AC000029, AC005799, AC008039, AC005225, AC004106, AP000103, AL034423, AC007151, AB018341, AP000300, AP000113, AP000045, AC008064, AC006500, AP000304, AL049856, AP000047, AC004454, AP000115, AL132712, Z97053, AC004185, AC005740, AL133312, AC004822, AC004832, AC006057, AL035461, AP000066, AC004815, AC005280, AL022316, AL049691, Z68288, D86995, AC005138, AC007938, U82695, AP000032, L05367, AC005370, Z82188, Z85986, AC007226, AC004526, U73023, AL031258, AC005621, AC005382, Z98886, AC004505, AL023579, AL049554, AC004408, AC004743, AP000466, Z98754, AC005484, Z84469, AC007057, AC008079, AP000509, Z98990, AC004495, AF020662, Z78021, Z755327, AP000089, AP000142, AP001068, AC001231, AP000697, AC002331, AP000696, AC007172, D87671, AJ011930, AL023913, AC005899, Z93244, AL008732, AF019413, AL024498, AC007091, AC012099, AC005495, AP000501, AL117330, Z74617, AL035209, AP000502, AC004991, AL031577, AC005094, AC006288, AL031666, AL031767, AL133485, AC007738, AC006353, D84394, Z73988, AL050347, AC005625, AC004783, AL031905, AL049843, AC006409, Z98950, AC005844, AC005509, AC004953, AL009181, AC003071, AF126403, U91323, AC005822, AC008126, AC005696, AC005874, AF134471, and AC006211.
HTXLF08	6466	958421	1 - 423	15 - 437	AL204494, AF633977, and AC002073.
HTXLF57	6467	790610	1 - 450	15 - 464	
HTXLF64	6468	974598	1 - 655	15 - 669	
HTXLF60	6469	869336	1 - 409	15 - 423	
HTXLF65	6470	974018	1 - 444	15 - 458	
HTXLF91	6471	787577	1 - 405	15 - 419	
HTXLF70	6472	756679	1 - 618	15 - 632	AF000355.
HTXLF35	6473	840283	1 - 457	15 - 471	AA633787, AA737678, AF764873, N31505, AF051943, and AB10706.

HTXLK05	6474	795355	1 - 313	15 - 327	<p>AI002744, AA601125, AA502991, AI133909, AI832009, AV069819, N23504, AA630672, AI046549, AA631507, AI038149, R49657, AI097530, AA812139, AC004787, AC005031, AC005670, AC005295, AC003369, AC007055, AC007878, AC004140, AC005901, AI049780, AC006449, AI049539, AI023281, AC004477, U80017, AI034451, AC004237, AC004799, AP000049, AP001193, AP000311, AP001117, Z74618, AC004517, AC004655, AC007199, AI022322, AC005747, AC002301, AC005277, AC002553, AI049699, AC004609, Z83846, AC007845, AC007226, AP000251, AP000030, AP00134, AP000212, AC006142, AC004456, AI035587, AI031311, AI033325, AI080243, AC005057, AC006530, AI090031, AC002326, AI031681, AC004051, AC002045, and AC004966.</p> <p>AA812542, R48980, AA338258, R64617, T96238, T90484, AI821396, AA689351, AA706160, AA515924, AA910783, AW188791, AI046519, AI821390, AA740879, AI280574, TS2786, AI043169, H38769, T90477, AA573693, AA601653, TS6025, TS8448, AA588611, AI041375, AA826033, TS9605, AC005005, AC002994, AC006950, AC002331, AI078462, AP000497, AC006130, AC004448, AC005924, AI049708, AI109980, AI109854, Z92546, AC005355, AI050321, AC004079, AC006148, AC005484, AC003029, AI118523, AC006388, AC006287, AC005832, Z85996, AI031774, AC005800, AP000353, AC005686, L14561, AP000048, Z98051, AC002464, AI031281, AI049759, AC004838, AC004990, AI117337, AF205588, AC003013, Z84718, AF130351, AC002073, AF019967, AF191069, AF068876, Z68192, U73166, AC005765, AC004938, AC006468, AC005383, Z97056, AI132712, AI020997, AC004081, AC002543, AC004129, AC005747, AF001550, AC005237, AI049869, AC006443, AI035687, AC005266, AC008179, AC009516, AC005346, AI035407, AC003982, AC005994, AF111168, AC002385, AC004223, AC006511, AC004241, AI034402, AC003954, Z83840, AI079340, AI034561, U29895, AP000298, AP001039, AF039907, Z97630, AC004650, AC005694, AP000089, AP000141, AP000112, AP000044, AP000692, AI031293, AC004668, AC004955, Y18000, AC003663, AP000351, AP001052, AI031311, Z95152, AC005874, and AF134471.</p> <p>AI561060, AW070892, AA478355, H53984, AI306191, AI305894, F00107, AA483929, N86538, AW022065, AI135377, AA018823, AA774059, AI523176, AI382825, AA478866, AI124610, AA493975, AI120897, AA508359, AI088768, AT54253, AA654781, H18014, Z22960, AI121235, AW148507, AW022406, AA478867, AA493894, AA987843, AI254192, AA012964, AW108758, R05324, H29443, AA620983, T06754, Z23806, AI044185, AA486876, AW327868, AA51552, AI873852, AI119649, AI036413, R01045, AA069445, AA832444, Z82250, AI031287, AC005101, AI022353, U66059, AC004686, AC008014, AF217403, AC000082, AP000690, AC004815, Z98941, AI031846, AB023049, AC000373, AI035417, AC000035, AC005943, AC005048, AC003081, AI022336, AC005043, AC000088, AC004069, AI050318, AC006449, X03340, AC008122, AI034429, AI030350, AC006501, U93305, AC004655, Z82206, AI079342, AF196779, AI109798, L13176, AI049539, AI096791, AI031311, AC005908, AC002072, AC009225, AC007227, AC002310, AC005682, AC000394, AC006046, Z82244,</p>
HTXL78	6475	773071	1 - 445	15 - 459	
HTXL89	6476	786475	1 - 436	15 - 450	

HTXLN72	6477	951958	15 - 270	Z93244, AL034374, AL035045, AC008044, AC006346, AL022718, AC005880, AC007676, Z93844, AC004687, AC005772, U47924, AL006996, AF000390, AL078614, AC006479, AC007225, AC006371, Z82245, Z81314, AL049748, Z94056, Z97989, AL133238, AL109759, U65416, AB000878, AC002985, AC000026, AL049709, AL035555, AC004103, AC009501, AC007346, Z97055, AC006443, AC000223, AF181897, AP000086, AC006004, AL034553, AL049760, AL050307, AC003691, AC004990, AP000506, AF141309, MG3543, MG6348, MG6544, AL080245, AP000339, AL121757, AC007172, AC006040, AC005386, AP000512, AC004992, AC005102, AC004460, AF200465, AC006480, AL136504, AC002480, AF111167, AC005859, AB000882, AL022323, AC005146, Z69917, AC004097, AL021878, and AL031281.
HTXLN72	6478	918658	15 - 519	AL050318, N58534, N78125, AL0215964, AL147574, AA994388, AA308806, AL284640, AV338869, AW074398, AL014735, AA515435, H64777, AW410400, N59638, F19258, AA610491, AA228329, AL110770, AW193265, AL471481, AL446464, AA340003, AA747472, AA529785, AL064864, AW339568, AA580662, AA683031, AA584749, AL205126, AA535661, AL030672, F36273, AW269488, AL963720, AA362700, AL334443, AL742771, AA318652, AL138265, AL349874, AL792108, F35113, AL610159, AL962050, AL937850, F31204, AA133986, AA558697, AL003172, AL917271, AL914706, AA551509, AA916039, N43757, AL015912, AL041706, AL287964, N71724, AA450199, AA831388, AW193432, AA515128, AF177861, AL669453, AW419262, AL921649, AL340453, AL7676100, AW074207, AA823851, AA361344, F29989, AL624698, AA593060, AA363547, AW074059, AL356904, AL922654, AL564284, AL570138, AA366035, AL038785, AA715606, F37286, AA713815, AA164960, AA631507, AL150211, AA743956, AW029038, F25203, AA633936, AA714595, AL382229, AL061334, AL150211, AL339440, AA569187, AW406755, AL047643, AW077817, AL365988, AA733208, AL041368, AA747480, AL677758, AA838479, AL341664, W60516, AW339687, AL613280, AW188544, AW190289, AL635272, AL499181, AA838477, AL688846, AA359958, AL040547, H60216, AL339850, AL554289, AA745410, H60544, AL040130, AL561060, AL037914, AL287528, AL679379, N23874, AA658235, AL358343, AW103415, AL679888, AA350859, AL744739, AL431303, AL246340, AL469166, AL499004, AL929531, AW069807, AW069427, AL079935, AL830390, N733083, AA584458, AL079812, AW276827, AA559290, AA747766, AL613261, AL046409, AA682189, AL709365, AL7166815, N26061, AW162049, AL879000, AL355224, AL133164, R93081, AA557879, H92005, AL4292574, AA095311, AL857323, AL095523, AA904218, AW088058, AL357551, AA491814, AW264973, AL371070, AC006116, AC007676, AC007228, AC003081, AC0003758, AC000353, AF176915, AC008062, AC009044, AC005294, AC007182, AC006213, AC002067, AL022721, AL121655, AL023284, AP000555, M87918, AC004987, AC007628, AL031681, AC006130, AL109807, AC007051, AC006948, AC007919, AC007842, AL031662, Z84719, AC005696, AB020859, Z98946, AC006582, AL021453, AC005182, Z94721, AL007245, AL133396, AL035086, AC004184, Z84475, AL031256,

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HTXLO14	6479	869332	1 - 346	15 - 360	
HTXLP15	6480	869202	1 - 580	15 - 594	
HTXLP18	6481	973431	1 - 1120	15 - 1134	
HTXLP18	6482	869331	1 - 253	15 - 267	
HTXLP18	6483	919761	1 - 249	15 - 263	
HTXLP18	6484	783411	1 - 274	15 - 288	
HTXLP18	6485	779215	1 - 352	15 - 366	



HTXLV39	6486	972762	1 - 587	15 - 601	AW024320.
HTXLV02	6487	866819	1 - 437	15 - 451	
HTXMC82	6488	779198	1 - 513	15 - 527	
HTXMH13	6489	928105	1 - 468	15 - 482	
HTXMH80	6490	775487	1 - 789	15 - 803	AI767654, AI624951, AI654511, AC003037, AR060648, Y15164, and Y16355.
HTXMH18	6491	921101	1 - 558	15 - 572	AA354168, AL021970, AC006359, Z63341, Z56778, Z63773, and Z61872.
HTXMI62	6492	870456	1 - 610	15 - 624	AW204494, AI167739, AI308750, AW079517, AA810700, AI304463, AI348049, AA781353, AA740190, AI245908, AA448390, AI073753, AI346019, AI240109, AA579960, AI146972, AI194065, AI242555, AI245270, AI160024, AA782917, AI198405, AA804861, AI498033, AI244610, AI018033, W84699, AI088909, AA150413, AW195727, AA150136, AW207349, AI350465, AA773774, AA448387, AA908581, AW182756, AI023582, AA772649, AI698603, AA740373, AI245510, AI004632, AI198724, AI566264, AA477201, AA291758, AA305875, AA477036, W79002, AA768998, AA194636, AA353431, AI459372, F34275, AA781769, AA401771, W63647, AA479797, H69491, AA026446, AA148813, AA152187, AW074444, AA148463, and AA026249.
HTXMI03	6493	923001	1 - 338	15 - 352	AA278496, AA427747, AI025778, AI118567, AW419161, AA503454, AI251429, AA372881, AA527396, AA354311, AA504951, AI271985, AI631064, AC002531, AC000353, AC004765, AC002375, AI035688, U41384, AP000303, AP000114, AP000046, AL109657, AP000359, AL031296, AC005701, AP000275, AL031284, AL031670, AL021391, AC005695, AC007676, AC005215, AC004895, MI9364, AC005193, AC004880, AC007690, AC006023, AI035681, AC007510, AI117338, AC005781, AC004600, AC007129, AP000037, AP000105, U75931, X55448, AP000210, AP000132, AL035659, Z95329, AP000248, AB026899, AC006251, AC005839, AC007993, and AP000326.
HTXMI50	6494	830027	1 - 395	15 - 409	H93883, AF140360, and AF074606.
HTXMI028	6495	823172	1 - 464	15 - 478	AA504938, AF115510, and AF045573.
HTXMI081	6496	869319	1 - 770	15 - 784	TI10293, Z98044, AC004463, and AC002040.
HTXMI992	6497	972759	1 - 558	15 - 572	
HTXMIQ07	6498	952206	1 - 564	15 - 578	AC006649, AL049761, AC004491, Z97054, AL133163, Z93023, AL121658, AI246003, AL139054, AI035072, AI229041, Z83822, AL080243, AL031255, AC006511, AC004150, and AC002316.
HTXMT06	6499	933376	1 - 594	15 - 608	AA836811, AI047602, AI561043, AI132777, AC005180, AI024507, AC003070, AC005723, AC005257, AI078581, AL133745, AC004967, AI109963, AC005736, AC005778, AL009172, AC005206, AC005015, AI118497, AC006121, AL021707, AC005667, AC006088, AC005765, AC005747, AC006360, AC004996, AC004876, AC004953, AL049830, AC004985, AC005696, AC002477, AC002565, AF196779, AC005089, AP000251, AC007283, AI035249, AP000030, AC000111, AC006160, AI096701, AI022326, AL021808, AC004263, AI031311, AI117258,

HTXMXU10	6500	961472	1 - 297	15 - 311	AF134726, AC005304, AP000502, AC005081, AC004910, AC005755, AC005519, AC004216, AL020997, AL121825, AL009181, AL009869, AC003684, AL121603, Z97054, AC002504, AC004491, AC004638, AC005389, AC005488, AC000025, AC006001, AC005231, Z93023, AF111168, AC004019, AC004834, AC007014, AC006965, AC002070, AL031673, AC005583, AC005274, AC006101, AC005911, AC0012384, L44140, AL003147, AL035458, AL031120, AF190465, AC008372, Z98051, AC004531, AC005520, AC004703, AC005907, AC005072, AC003983, AC005288, AC006064, AC004675, AF001054, AC005625, AC002544, AC005072, AC007955, AC005562, U91321, AC004928, AC005715, AL021154, AC003104, AL049832, D88268, AF088219, U95740, AC005364, AL121652, AC005393, AL022722, AC006449, AL049794, Z97055, Z84721, AC005688, AC007384, AC007999, AL096816, AC004465, AF069291, AC000097, AC005261, AC006270, AL122020, AL109627, U95742, AC005514, Z92845, AC007308, AC006547, AC005971, AC007151, AC004125, AL050341, AC002059, AC002465, AL049872, AC000115, AC004983, AL133353, AC005295, AC005728, Z84466, M29930, AC004104, U91323, AC007731, AC004820, AC003033, AC006511, AC005666, AL020092, AC004447, AC005500, AC005914, AC005300, AL096791, AP00247, AP007899, AC005255, AF111169, AC006275, AC004526, AC006084, AC002394, AC004139, AL022238, AL021579, Z84480, AL049776, AF121781, AC002314, AC003003, Z82205, AL121658, AC004887, AC005011, AL133269, Z99716, AC005102, AC000075, AC005086, AC016027, AL022236, AC006498, AC004134, AC007199, U62293, AB026898, and AL139054.
HTXMX030	6501	923005	1 - 801	15 - 815	AA336080.
HTXMX32	6502	780663	1 - 414	15 - 428	H69312.
HTXMX41	6503	789332	1 - 658	15 - 672	AL143899, AL185700, and AA935389.
HTXMY15	6504	80129	1 - 487	15 - 501	AC006369.
HTXMY23	6505	835044	1 - 1094	15 - 1108	
HTXMY29	6506	789619	1 - 355	15 - 369	
HTXND08	6507	869311	1 - 605	15 - 619	AA617277, AF071704, AC016831, AC005940, AC006441, AC005071, AC005277, AC005921, U82828, Z93023, AC007868, AC005781, AC004854, AL133353, AC002395, AC005829, AC005091, AF000501, AF134726, AC007899, AC004686, AC004009, AC003048, AC005067, AC005379, AC005288, AC005920, AL022166, AC002394, AC004967, AC007011, AF165926, AC000035, AC006023, AC002316, AC002072, AL031295, AC003006, Y10196, AC003043, U919623, Z84466, AC004383, AC010200, Z98941, AC004605, AC006121, AC004812, AL049759, AC005332, AC002091, AC01133, AC002300, AL035086, AC004584, Z69890, AC008498, AC006285, AL008718, AP000263, AC004000, Z82214, and AC002563.
HTXND91	6508	789706	1 - 634	15 - 648	
HTXNF56	6509	974048	1 - 359	15 - 373	

HTXNN80	6510	966045	1-269	15-283	
HTXNN82	6511	973993	1-354	15-368	
HTXNN83	6512	922997	1-500	15-514	AC007151, and AC005071.
HTXNN33	6513	780965	1-1099	15-1113	AA687306, AA262231, and H59981.
HTXNN048	6514	963444	1-242	15-256	AC004001.
HTXNN058	6515	916249	1-447	15-461	
HTXNN06	6516	934303	1-424	15-438	
AI017099, AA115566, AI679782, AA368329, W80696, AA159006, AI940546, AA524800, AA133013, AT1133856, AI821659, AI281622, U46402, AW023975, AW161459, AW268329, AW161879, AI191343, AI003797, AA936548, AA339592, AW029626, AI888050, AI877626, AI982994, AI114645, AA475294, AA827383, AW169390, AW157173, AA533923, AA532360, AI520925, AW265688, AA559166, AI686563, AA313078, AI749306, AA809131, AA832235, AI043707, H59836, AA084320, AW129188, R31264, AA099907, R66407, AA218684, AC002126, AC005620, ZR2182, AC006162, AP005555, AC005565, AC006026, AC004263, AP064857, AC006001, AI133353, AC006006, AC007725, AC004081, AC005988, AI049709, AC005759, AI035086, Z95116, AI078581, AC007216, D86995, AC005703, AC005295, AC004832, AC010205, AC005005, AC005409, AC006130, AC003553, AC005288, AC000003, Z83844, AC006312, AI009179, AI022315, AC006084, AC004820, AC004671, AC005839, AI035420, AC005355, Z98051, AC005821, AC004638, AC002310, AC004821, U95742, AC006538, AP000991, AC005377, AI034548, AP000692, AP003626, AC003089, AP00503, AC007114, AI034549, AC006430, AI031277, AI031427, AC004812, AC002369, AF107257, AB004907, AC004834, AC007686, AC007917, AC005940, AP002236, AC005544, AC005480, AC005913, AC004150, AF031078, AP000045, Z98946, AC004922, AI022395, AI049843, Z82097, AF030876, AF196969, Z97352, AC004382, AP000030, AP00212, AP000134, AI132826, AC007066, AC002077, AF031076, U85195, AP000346, Z99128, AI049569, AC005412, AE000658, AI035658, AB003151, AP000688, AI022324, AC005003, AC003982, AC005086, Z84486, AC007201, AC006322, AC000065, AF111168, AI021154, AI121652, AC005592, AC002350, AI031447, U91323, AI035072, AC002381, AC005332, AP000337, AC005800, AI008635, AC006241, AC004230, AF118808, AC004000, AC005102, AI034429, AC005907, AI035249, AF134726, AP000502, AC007731, AF111169, AC004034, AC005500, AC005484, AC005803, AI030318, AC004953, AC005911, AC002538, AI035450, AC008718, AC002115, AI109963, AI049761, AI096774, AC002430, AC005519, AI096712, AI024507, AI008719, AC002554, AC016831, AC004125, AC007363, AP045555, AC002425, AC007384, AC002378, AP000355, AC003037, AI133312, L44140, AC004009, U78027, AI105002, AC006271, AI031311, AP000359, AC000026, AC002040, AC005581, AI022311, AC004816, AC004231, Z83820, AC004019, AC004491, AC002472, L81868, AI078638, AI133163, AC005048, AC005206, AC003669, AC004938, AC004106, AC004890, AC002404, AI035422, AC007263, AC006948, AC004084, AC003029, AC002059, AC005920, AC008041, AP000010,					

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HTXN063	6517	951039	1 - 216	15 - 230	AC005583, and AC004997.
HTXN061	6518	913781	1 - 542	15 - 556	AL109616, AP000085, and AP000222.
HTXN017	6519	856465	1 - 1217	15 - 1231	AL168689, AA447759, N24906, H80735, N36031, and A1088950.
HTXN07	6520	952165	1 - 850	15 - 864	AW104380.
HTXN043	6521	869398	1 - 696	15 - 710	AI140432, R67196, H809197, Z44614, and W86042.
HTXN076	6522	869189	1 - 720	15 - 734	T11417, AW178893, D80195, D80193, AW177440, C06015, AW360817, D80022, AA314184, AW178907, AW178908, D80164, D59502, AW352170, D80439, AA305409, AW366296, D59619, D80210, D80391, D80240, D59787, D80227, D59467, D80247, C03092, AW377676, C14331, AA305578, D45260, D59275, D80038, AW377672, AW178905, AW177731, C14389, AW378528, AW378533, AA809122, AW378532, AA285331, AW360811, D80166, AW375406, AW179328, D80251, D58283, D59859, D59927, D51423, D51799, D80253, D80043, AW179023, AW378534, AW179019, AW179332, AW378542, AW178762, T48593, AW178911, F15647, AW178906, T03269, AW367950, AW178914, A1557774, A1525920, A1525227, I14842, I50126, I50132, I50128, I50133, AB002449, A62300, A82595, AR060385, D89785, A84916, AB028859, AJ132110, D34614, AR062872, A62298, AR018138, AR008278, AF058696, AR06488, AR016514, Y09669, A70867, AR066487, Y17187, AR060138, A45456, A67220, Y17188, A78862, A94995, D26022, A30438, A26615, AR052274, A43192, X67155, A63261, AA43190, AR038669, A25909, Y12724, A64136, A68321, AR054175, X68127, AR008443, AR008408, AR016691, AR016690, and U46128.
HTXN070	6524	869289	1 - 503	15 - 517	AA326098.
HTXN074	6525	918076	1 - 523	15 - 537	AI990442, AL760050, W17255, A1743197, AA161408, AA046819, AA100199, AI937600, W17197, AW134967, AA365733, A1878952, AW407024, F11958, AA404043, AA404641, T65652, AW408221, AW247376, AA101041, AL134478, AI420513, AA418264, AA993567, AA446731, N78836, R08951, H53247, AP078836, Y10769, AB002086, and AF112211.
HTX0032	6526	869280	1 - 627	15 - 641	AW160365, D83782, and U67060.
HTX0062	6527	806643	1 - 920	15 - 934	AW405057, AI950337, and AC002303.
HTX0084	6528	929789	1 - 493	15 - 507	
HTX0H04	6529	926909	1 - 358	15 - 372	
HTX0H60	6530	869271	1 - 524	15 - 538	
HTX0J50	6531	869279	1 - 696	15 - 710	AA640727, and AA569750.

HTXO192	6532	974039	1 - 477	15 - 491	AW409822.
HTXOM10	6533	963435	1 - 414	15 - 428	AW367431.
HTXOO06	6534	934248	1 - 633	15 - 647	A0333221, T67234, and A1247472.
HTXOO083	6535	898860	1 - 546	15 - 560	
HTXOR11	6536	965090	1 - 493	15 - 507	
HTXOR48	6537	869253	1 - 649	15 - 663	AA114199.
HTXOR86	6538	914739	1 - 599	15 - 613	
HTXOS47	6539	965558	1 - 757	15 - 771	
HTXOT42	6540	974034	1 - 421	15 - 435	AA424143, A1702720, A1039624, and AA424185.
HTXOU06	6541	852057	1 - 535	15 - 549	
HTXOU48	6542	869252	1 - 409	15 - 423	AL022398.
HTXOL67	6543	906909	1 - 406	15 - 420	AP000694.
HTXOX02	6544	918556	1 - 600	15 - 614	
HTXOX42	6545	920274	1 - 540	15 - 554	AA348747.
HTXOZ02	6546	918566	1 - 446	15 - 460	D80253, D58283, D80366, D80043, D80188, D80022, D59275, C14331, D80391, D59787, C14389, D80195, D80196, D59619, D80210, D80166, D80240, D59859, D80164, D81030, D59502, D59467, D51423, D51799, D80227, D80212, D50955, D80219, C15076, D59927, AA305409, D57483, D59889, D80269, D80038, D80193, D50979, D80024, C14429, D59610, D80378, D80251, D80045, D51022, D51060, D80241, AA305578, AW177440, D81026, T03269, C14014, AW178893, D80248, AW179328, AA514188, D80522, C75259, AW360811, AA514186, D80133, AW378532, D80247, D80134, D80132, AW178775, F15647, AW369651, AW178762, AW375405, C05695, AW177501, AW177511, AW377671, D51250, D80168, D83253, D80268, AW366296, AW360844, D80439, AW360817, AW375406, AW352158, AW378534, AW179332, AW377672, AW179023, AW179023, AW178905, D59695, D80949, AW177505, C14227, AW352117, AW176467, D80302, AW352170, A910186, D80064, D81111, AW352171, D51079, AW377676, AW178906, AW177731, D59373, AW178907, AW179019, AW179024, C14298, C14407, AW177728, AW360834, A1905856, AW360841, AW179020, AW378540, AW178909, AW177456, T11417, AW179329, AW178980, AW178774, AW177733, AW378528, AW178908, AW178754, AW378543, AW179018, D51103, D80157, AW352174, Z21582, AW179004, AW179012, D51759, AW178914, AW178781, AW378525, AW367967, C14077, AW177722, AW179009, AW352120, T48593, AW178911, AW352163, AW178983, D58246, C06017, AA285331, D59633, D51097, D59503, A1557751, D58103, AA809122, C03092, D45260, H67866, D59627, AW177723, D51213, AW367950, D80258, H67854, A1538550, AW378533, A1525923, D80014, AW178986, C14344, T03116, AW177508, D45273, A1525917, D59317, D60010, C14973, D51221, AW177497, A1535686, D59474, D51231, A1525920, C14957, AW177734,

				AA514184, C14046, D59551, D60214, A1525227, C16955, A1557774, A1525235, T03048, A1525912, A1525215, Z33452, A1525242, T02974, AW378542, A1525925, H67858, AW378539, A1539661, C05763, A1525222, A1525237, D51053, AW360855, C04682, C13958, AC008149, A62300, A84916, A62298, A132110, AR018138, AF058696, AR008278, X67155, AR0028859, Y17188, D26022, A25909, A67220, D89785, A78862, D34614, D88547, Y12724, X82626, A82595, AB002449, A94995, AR025207, AR060385, AR008443, I50126, I50132, I50128, I50133, AR066488, AR016514, AR060138, A45456, A26615, AR052274, AB012117, Y09669, A43192, A43190, AR038669, X68127, AR066487, AR054175, A30438, I14842, A85396, AR066482, AR066490, A44171, A85477, D50010, I19525, Y17187, A86792, U87250, X93549, A63261, D88507, AR008277, AR008281, AR008408, AR062872, A70867, AR016691, AR016690, U46128, D13509, A64136, A68321, AR060133, I79511, X72378, U79457, AF123263, AF135125, AR032065, AR008382, and AB033111.
HTXP003	6548	922877	1 - 474	AL109830.
HTXP010	6549	963397	1 - 639	AC005783.
HTXP028	6550	957888	1 - 339	AC005261.
HTXP091	6551	869224	1 - 722	AL049653.
HTXP092	6552	869214	1 - 665	AP000700.
HTXP033	6553	799925	1 - 759	D80038, D80164, D51423, D59275, D80195, D50979, C06015, C14389, D59467, D80227, D59502, AA305578, D80043, D58283, D81026, D80269, D80193, D59859, D59610, D80022, C14331, D80166, D59619, D80210, D51799, D80391, D80240, D80253, D59787, D80268, AA305409, D80439, C15076, D51103, D81030, D80188, D80247, D80248, D80522, D80212, D80366, D80196, D51022, D80045, D80219, D80302, D50995, AA514188, D59927, D51060, D57483, C14014, D80378, D80241, D59889, D80133, D80024, AA514186, AW360811, AW177460, D80157, D80251, T03269, D51759, AW178893, C14429, AW377671, AW375405, D59633, C75259, AA809122, AW178906, AW177731, AW179019, H67866, D45260, AW366296, AW360844, AW360817, AW179328, C05695, AW179020, D59373, AW375406, T48593, AW378534, AW179332, T11417, AW377672, AW179023, AW178905, AW178908, AW378532, AW378528, AW178762, AW177501, AW177511, D59503, AW360834, H67854, C03092, AW352171, AW377676, AW179004, AW352170, D81111, AW178907, A1525923, AW179024, C14227, D59317, D80132, F13647, D59627, D80258, AW177505, D52291, D51250, D80134, AW360841, T03116, D80064, AW178775, AW178909, AW177456, AW176467, AW178936, AW179329, AW177733, AW352120, AW179009, AW178980, D58246, D60214, AW178914, AW178911, AW178754, AA514184, AW179018, AW352158, D58101, AW367950, I51213, AW179329, A1525917, D80014, AW178774, C14973, AW177734, C14344, AW378533, A1535686, D51221, A1525227, D59474, AW179012, C14407, D59551, D59695, D60010, AW378525, AW177722, AW352163, A1525920, A1557751, AW378543, AW378540, AW378542, C14957, A1557774, AW177728, A1525242, C14046, AW378539, AW177723, A1525215,

					AI525235, AW178781, AI910186, H67858, H45273, AB05856, AI525925, T03048, AI525912, AA283331, C14077, C14298, C16955, D80168, Z21582, C05763, Z33452, T02974, AI525237, AI525222, D31458, AW360855, T02868, AI525928, C04682, D52317, C13958, N66429, AI132103, AW369651, Z30160, D80314, AW179011, Z82208, AL096777, AR008278, AB028859, AJ132110, AB4916, A82595, AF058696, AR060385, AG2300, AG2298, AR018138, AB002449, I50126, I50132, I50128, I50133, AR016514, A26615, AR052274, A43192, A43190, X67155, Y17188, A94955, D26022, Y12724, AR060138, A25909, A45456, AR038669, AR066488, A67220, D89785, Y78862, D34614, AR066487, Y09669, I14842, A30438, AR008443, AR054175, D50010, Y17187, D88547, A63261, AR016808, AR008408, AR008277, AR008281, X82626, AR016691, AR016690, U46128, A70867, AR062872, B24488, I79511, D13509, A64136, A68321, AR052507, AR060133, X68127, I18367, AF123263, AR032065, and AB012117.
HTXP892	6554	869221	1 - 389	15 - 403	W52804, AA261853, W07856, AA283855, AA077296, AA319080, W60104, AL046053, AA496322, AA402082, AA077601, AA101354, AW402545, AA078651, R11246, AW405789, AC006014, AL117583, AB014518, and AC005488.
HTXPW03	6556	922884	1 - 423	15 - 437	AI041722, AW301211, AA420513, AW201191, AB862185, AA338281, H68343, AW080772, AA564925, AW410784, AL283842, H73550, A0066416, AA579152, AI093979, AA508148, AI819391, AC002126, Z82190, AL049394, AC004908, AC005164, AC005924, AC005924, AC005164, AC006121, AC004263, AL132992, AL070997, AL122020, AP003346, AC002425, AL031291, AP001068, AL117344, AC004983, AL031428, AC004832, AC004653, AC003029, AC003950, AJ011930, AF129756, AC005015, AP000272, AP00104, AC003982, AC006468, AP00510, AL109759, AL022336, U05309, AC004644, AL031321, AC002400, AL035703, AC006344, AC007938, U89336, AB023048, AL022320, AC005726, AL121825, AC002119, AC005585, AC005778, AL008582, AC005940, Z83845, AP000269, AP00103, AL133500, AC006385, U91323, AC005971, AL109963, AC002558, AC005072, Z95329, AC005049, AL002330, AC004032, AC002365, AC000379, AL033524, AP000553, AC002045, U82757, AC006163, AL049692, AC004841, AC006450, AC004149, AP000297, AP00112, AP000044, AC004132, AP001053, AC005899, AC007676, AC005398, AC002312, Z82178, AC002395, AC006023, AC004883, AC005529, AL132994, AC002365, AC004589, Z73417, U95090, AC004645, AC005379, AF001552, AL1009179, AC003667, Z98946, AC004593, AC007878, AC007919, AC004079, Z97055, AC006270, AC005488, Z82176, AC005952, AP000272, AC005363, AC005606, AP000106, AP000038, Z95113, AC006042, AC001231, and AP000152.
HTXPX02	6558	918494	1 - 526	15 - 540	AA569047, and AC008545.
HTXQA18	6559	869184	1 - 593	15 - 607	
HTXQC36	6560	961161	1 - 633	15 - 647	
HTXQC77	6561	974033	1 - 705	15 - 719	AL021331, AL023754, AC002314, AL080243, AC004963, AC002102, AC005779, AC005757,

HTXQF10	6562	963403	1 - 557	15 - 571	AC006287, AC005011, AL078596, Z14477, AC007435, AC004926, and AL121653.
HTXQM11	6563	965645	1 - 650	15 - 664	Z97989.
HTXQN24	6564	963503	1 - 487	15 - 501	AL183539, R06046, H96741, N24376, A1W26964, A1W130380, and AA033943.
HTXQR90	6565	869139	1 - 486	15 - 500	AC002531.
HTXQL07	6566	952030	1 - 386	15 - 400	
HTXQW02	6567	918081	1 - 445	15 - 459	AA355311, and AL039535.
HTXQW29	6568	869134	1 - 456	15 - 470	
HTXRA11	6569	965596	1 - 392	15 - 406	AC004508, and AL049549.
HTXRB38	6570	869133	1 - 344	15 - 358	
HTXRC17	6571	973981	1 - 538	15 - 552	AA381937.
HTXRD51	6572	921285	1 - 484	15 - 498	
HTXRE04	6573	926371	1 - 422	15 - 436	AL418397.
HTXRJ02	6574	918031	1 - 609	15 - 623	
HTXRM86	6575	975072	1 - 564	15 - 578	
HTXR002	6576	918009	1 - 194	15 - 208	
HTXSB88	6577	914627	1 - 832	15 - 846	AA026814, AA127612, AL110352, H54652, N78337, AA534175, AA489133, R50909, AW381645, AA329024, H51803, N78336, H08302, AW139389, AA034086, T74441, F20615, F20584, N87003, AA315270, A1168489, AA025761, N47927, AW369408, AA921775, H48655, Z46044, and AF077042.
HTXSK91	6578	915903	1 - 449	15 - 463	A1989940, A1950415, and A1656850.
HTXSR92	6579	973095	1 - 416	15 - 430	AA320226.
HTYNC52	6580	869119	1 - 450	15 - 464	AW152346, AW057660, AA225627, AC006040, AC002350, Y14768, AC002558, AL021918, AL022322, AP000553, AL096791, AC005726, AP000505, AC007536, AL080243, AL031680, and AC005015.
HTYSB62	6581	768350	1 - 333	15 - 347	AA380842, AL181918, and AW402301.
HTYSB32	6582	702994	1 - 420	15 - 434	H10348, AL099031, and AC002326.
HTZAB04	6583	973811	1 - 636	15 - 650	AW366296, AW375405, D80045, A1905856, AW367950, AW375406, AW177440, AW360811, T03269, T48593, AW378532, AW178893, C14389, AW352171, AW179328, D80164, D59467, D58283, D59859, AW377671, D80022, AW360844, C14331, D80166, D80227, D80195, AW360817, D80195, D59927, D51423, D59619, D80210, D51799, D80391, D59275, D80240, D80253, D80043, D59787, D59502, AW178905, AW378534, AW179332, AW377672, AW179023, D81036, AW352174, AW177731, D80212, D80196, D80188, D80219, C15076, AW369651, D81026, D80269, D80038, D57483, D80366, AW177501, AA305409, C14429, AW177511, D50979, AW179020, D50995, AW352158, D59889, D59610, D80024, AA305578, D51022, AW178762, AW377676, AW178907, AW178908, AW352170, AW179019, AW179024,



HUJA025	6584	878465	1 - 341	15 - 355	D80378, AA514188, C14014, D51250, AW178775, AW352117, D51060, D80248, AW177505, D80522, AW360841, AW178909, D80241, AW177456, AW178906, AW179004, D80251, AW179329, AW178980, AA514186, D80133, AW177733, AW378528, AW178754, AW179018, AW176467, AW178914, AW352163, AW178911, AW378525, C75259, AW367967, AW178983, AW10186, D80268, AW177728, D80302, AW178774, AW378543, D80439, C05069, D80247, AW360834, D80132, D80134, AW178781, AW177723, D58253, AW378540, D51103, AW352120, D80157, D51759, AW178986, T11417, D51097, AW177734, C14227, D81111, D80064, C06015, AW378533, D58246, D45260, D59503, D58101, AA285331, A1556686, AW360855, A1557751, A1535850, T03116, A1525917, D59317, D80258, D80314, D80014, C03092, AA514184, H67854, AW378542, H67866, AW378539, AA809122, A1525973, A1525920, A1557774, A1535959, A1525221, A1525913, A1525925, A1525928, A62508, A84916, A94995, Y17188, A78862, A82595, AR018138, AR016514, X67155, A67220, D89785, D34614, Y12724, D26022, A1132110, A25909, AB028859, AR008278, AF058696, A43190, D88547, A30438, Y17187, X82626, AR038669, AR008443, I50126, I50132, I50128, I50133, AR025207, AR066488, AR060138, A44171, A45456, Y09669, A26615, AR052274, AR060385, AB002449, AR066487, A43192, D50010, AR066490, AB012117, I18367, A70867, A63261, X68127, AR008408, AR016691, AR016690, U46128, AR062872, AR060133, A85396, AR066482, D88507, D11509, A85477, I19525, A86792, A64136, A68321, X93549, I14842, AR054175, AR050680, AF122263, AR032065, and AR008382.
HUJA007	6585	951873	1 - 509	15 - 523	AI890529, AA833799, AA832067, AA743086, AA612890, AA808056, AA745893, and AW104930.
HUJAM39	6586	911399	1 - 1309	15 - 1323	AA280958, AW401543, A1940118, AW385179, A1763106, AW175909, and AA156129.
HUJBL07	6587	951874	1 - 412	15 - 426	AC005003.
HUJCB67	6588	938914	1 - 453	15 - 467	AW407535, and AW403048.
HUJCM08	6589	957784	1 - 720	15 - 734	AF128893, AF114847, AB016767, AF121948, AF015950, and AF018167.
HUJCT61	6590	933920	1 - 649	15 - 663	
HUJCV04	6591	926175	1 - 373	15 - 387	AW194140, AB002354, and AC003663.
HUJDB08	6592	957786	1 - 823	15 - 837	AA804187, AA507032, N27615, A1818362, AW002330, AA827490, AA714073, AL042777, H80989, AA360910, AA780766, AD24127, AA775929, AD065038, AW071667, AA659832, AW193337, AA758275, H52638, AA376358, AA788592, AA814878, T48241, F11718, AW149288, AA229422, AA825185, AW089016, F35902, AW302670, AA630122, AA077619, AA084880, AA086042, A1697425, A1915081, AA654874, A119382, A1283924, A1879908, H90878, T06485, A1874341, A1119444, AA584594, A1368732, AA091529, F23294, Z98474, C14330, A7718462, AA715233, AA856851, H73550, A1366555, AA229988, A1260028, AA626411, A1683116, AA904211, R74433, AA434078, AL041681, AL041682, T05118, AL038759, A1160786, AA706202, R93919, AA668715, W24312, F24745, A1758799, AA504951,

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HUJD58	6593	920851	1 - 612	15 - 636
HUUAJ10	6594	914330	1 - 777	15 - 791
HUUAJ82	6595	966685	1 - 637	15 - 651
HUUAJ512	6596	968953	1 - 643	15 - 657
HUUAJ06	6597	966816	1 - 599	15 - 613

					AA772713, AA8147209, AA809418, AA235853, AA812366, AI520722, AI273152, AI031924, AI197902, AA854522, AA541445, AA813910, AI160408, F32212, AW381946, AA808361, AI025417, AA214593, AA312286, AA807833, AI886250, AA760697, AA306027, Z93241, AFI51854, and AI022316.
HUUA883	6598	921559	1 - 358	15 - 372	AL046885, AA705908, AI812019, AI657105, AI167247, AI432943, R11664, and AL031320.
HUUC006	6599	931322	1 - 447	15 - 461	AI355246, AI679759, AI023052, AA904211, AA613624, N95817, AI079901, AA468975, AC005726, AC005799, AI021937, AI034549, AC007151, AC005519, AP000493, AC005911, AC005520, AC007066, AI049780, AF088219, AC005666, AC005081, AI121652, AFI130342, Z93017, AC006017, AC005228, AC004699, AI022069, AC007052, AC004106, AC007226, AC007283, AP000513, AC007055, AC006211, AI139054, AC005755, AC006430, AC005829, AC005697, AC005722, AC004890, AI110502, AC004694, AI133371, AC005358, AC009464, AI135747, AC005158, L11910, AC004686, AI086629, AI008710, AFI130343, AI132987, Z98751, AC007934, AI049709, AC009498, AC006285, AC005670, X87344, AC007993, AI022574, AC006312, AC007899, AC003087, AC007565, AI121655, AC005839, AI049589, AC004477, AC004526, AC007676, AC004675, AC002369, N89651, AC005875, AC005529, AI109984, Z81365, AC005071, AC007528, AI031230, AC006271, AI031685, AI035090, AC005089, AC005531, AC006480, AC003042, AI008723, AP000688, AC005189, AI008729, AI080248, AI035422, AC004079, AC003035, AI049713, AI031311, AI031575, AC007216, AC003664, AC006065, AC006960, AC005899, AI031312, U82828, AI022396, AC004098, AC005234, AC006011, AC007637, AC004797, AC002527, Z95125, AF205588, AC003075, AC004888, AC005730, AI022326, AI031775, AC004033, AC005599, AC005067, AI121595, AI031680, AC004531, AI133245, AC004024, AI031316, AC007842, and Z98946.
HUUCQ03	6603	915269	1 - 907	15 - 921	AC000119.
HUUCS49	6604	965987	1 - 504	15 - 518	AI046287, D78805, D78848, R11003, AI044772, T79263, and Z82171.
HUUDG08	6605	957721	1 - 391	15 - 405	
HUUDJ10	6606	961717	1 - 623	15 - 637	
HUUDS10	6607	961706	1 - 325	15 - 339	AA457765, AI349129, AA824626, H24051, H73550, AA720833, AA378718, AW088835, AA045600, AI050070, AA339092, AI399992, AC005237, AC011331, AC005102, AI031587, U52112, L44140, AC009288, AC005527, AP000552, AC007993, AC004963, AI049758, AI006345, AC005529, AC004967, AC003077, AI033525, Z85986, AI022314, AC003684, AC003101, AI034429, Z92844, AC002352, AC004893, AC005104, U91321, Z97635, AC006040, AC004686, AI008718, AC002591, AC004851, AP000313, AP000050, Z95118, AF000117, AC002492, and AF038458.
HWAAE23	6608	675326	1 - 750	15 - 764	AA610659, T94692, AC006388, AFI11168, AI009174, and AC003063.

HWAAE55	6609	719194	1 - 349	15 - 363	
HWAAE90	6610	778917	1 - 407	15 - 421	
HWAAE27	6611	721151	1 - 432	15 - 446	AC002126.
HWAAAF66	6612	908541	1 - 389	15 - 403	AA884296.
HWAAAF81	6613	712203	1 - 336	15 - 350	AA652914, and AA807140.
HWAAAL31	6614	697716	1 - 537	15 - 551	Z85996.
HWAAAM04	6615	614973	1 - 394	15 - 408	R84880, AL032875, T27238, AW162263, T49209, AW388701, AW388609, AA918754, AL445934, AW173754, AA807287, AL285709, AL792664, AW004638, AL095123, AA099624, AL393841, AC005412, AF050154, AC002365, AL749921, AC005015, AC002045, AL049759, U91321, AP000285, AP000286, AC004262, AP000109, AP000041, AP000692, AC003049, AC002300, AC004084, AP000111, AP000043, AC004895, AP000212, AP000134, AL035209, AC004912, AP000295, AC005011, AC008126, AC002039, AP000031, AC006274, AP000252, AP000152, AP000010, AC004893, AC000097, AC007663, AC006549, AC006547, Z92547, AL080243, AL035562, AC012599, AL020993, AP000555, and AC006541.
HWAAAM23	6616	675712	1 - 546	15 - 560	AA569796, AA190348, AW408725, T64954, AW407501, AW390099, AB01126, and AL049935.
HWAAAR36	6617	915621	1 - 479	15 - 493	AC007032.
HWAAAW7	6618	935602	1 - 567	15 - 581	AW402458, AW193493, AW192330, AA457685, R92629, AA350186, AW270258, AA580116, AA553448, AL124798, AL920972, AL678392, AC002115, AL049780, D84394, AC003695, AC005856, AC006530, AP000509, AL133246, AL035587, AC004185, AC002544, AP000090, AC004386, AC002418, AC005730, AL049869, AC004983, AP000689, AL035455, AC004019, AL031120, AC005914, AC005666, AP0005972, AC003664, Z83840, AC007510, AL031230, AC007388, AB006600, AL031589, AP000512, Z84485, AP000555, AL024509, AC005520, AC006160, AC003983, AF196970, AC007676, AC003037, AC005037, AL031650, AC005520, AC006385, AL096712, AC005724, AC008115, AL009181, AC003077, D66992, AL049777, AL079303, AC005921, AP000694, D88270, AC007216, AC004033, AC006037, AC004531, D87675, AC006468, AC006017, AC005476, Z98051, AL023879, AC004526, AL022320, L78833, AC004893, AC002350, AC007055, AC008469, AC005500, AC007687, AL020997, AL022476, Y10196, AC008498, AC007298, AC005061, AC005004, AL031132, AL034406, AL021578, AC004813, AC004106, AC007546, AC002310, AC003071, AC006251, AC007563, AC004831, Z83846, AC006449, AC005015, AC007543, U66083, U63721, Z82246, AP000126, AP000204, AC004584, AP000089, AC005768, AC007226, AC005215, AL117337, AC004491, and AC007536.
HWAAAY03	6619	923734	1 - 402	15 - 416	
HWABAB49	6620	859878	1 - 369	15 - 383	AW407837.
HWABBB37	6621	870088	1 - 368	15 - 382	AA985132, AW407779, and AW068669.
HWABBE67	6622	751418	1 - 219	15 - 233	AL117351.

HWABE94	6623	838096	1 - 528	15 - 542	AA609396, AT758902, AL147305, AT707616, AW235273, AA505993, AA007507, AT198364, AW408843, W89117, AT181799, AT014474, N78660, AT181949, AT181952, AT181954, AA827181, AA807696, AT478470, W28310, AT620079, W28761, AA504463, AA504537, C00613, AA630618, AA621088, AA034986, AA033755, AA609139, AW408062, RS6755, AJ342134, AT368615, D31434, AA252777, AA976522, AA779863, AA868560, W15149, AW385052, F11972, R33966, AT952009, T63060, T65487, T58123, AA443135, AW170522, AT039390, AL046681, AL042009, AL046137, AL047188, AT46483, AT049726, AA598562, AT890907, AT249936, AT672187, AL045503, AL042551, AL042503, AW337394, AB029003, and AC002400.
HWABF91	6624	698131	1 - 437	15 - 451	AT805973.
HWABH18	6625	529803	1 - 521	15 - 535	
HWABQ57	6626	734536	1 - 317	15 - 331	AL134038, AA610414, AA091193, AC005593, Z95152, AC006112, AL121757, and AC003987.
HWABR04	6627	494837	1 - 370	15 - 384	
HWABR51	6628	719221	1 - 423	15 - 437	AA340284.
HWABR82	6629	784211	1 - 105	15 - 119	AA468312.
HWABW02	6630	919441	1 - 327	15 - 341	
HWABW15	6631	659944	1 - 817	15 - 831	
HWABW34	6632	703861	1 - 333	15 - 347	
HWABW78	6633	865145	1 - 338	15 - 352	AL078584, and Z78726.
					AT417830, AT123348, AT123698, AT470030, N53143, AW342077, AT955224, H17323, AW000844, AA534687, AW294198, H17823, T15834, R69639, AT248017, R42888, AA553685, T26637, R69560, R36850, T34756, R39028, AT991788, T99687, and AF131762.
HWABX49	6634	685187	1 - 333	15 - 347	AA243866, AW001383, R36135, AL078593, AB014580, and AC002526.
HWABY68	6635	752825	1 - 373	15 - 387	
HWABY12	6636	968857	1 - 565	15 - 579	AC006991.
HWACA38	6637	943074	1 - 1037	15 - 1051	AW407984, AW408019, AA251937, H14675, and AL035530.
HWACB75	6638	685247	1 - 448	15 - 462	
HWACG21	6639	868530	1 - 324	15 - 338	AT888883, AA528227, AW303196, AA666332, AT732547, AW301350, AA468131, AL031289, AL121825, AC004889, AL031003, AC005138, AL049569, AC002527, AC002456, Z98946, Z83846, AL133244, AL035410, and AL109967.
					TI8924, and AF075587.
HWACC64	6640	675517	1 - 460	15 - 474	AA491189.
HWACC68	6641	732710	1 - 470	15 - 484	
HWACC94	6642	670912	1 - 309	15 - 323	
HWACH13	6643	686740	1 - 389	15 - 403	
HWACH49	6644	722572	1 - 438	15 - 452	AC008039.
HWACK78	6645	753565	1 - 468	15 - 482	
HWACM17	6646	662307	1 - 390	15 - 404	AW183544.
HWACP03	6647	869938	1 - 659	15 - 673	

HWACQ19	6648	668093	1 - 514	15 - 528	AI418472.
HWACR28	6649	683983	1 - 390	15 - 404	AC005058.
HWACR77	6650	771777	1 - 105	15 - 119	
HWACU96	6651	787349	1 - 247	15 - 261	
HWACV04	6652	927275	1 - 466	15 - 480	
HWACX82	6653	705560	1 - 408	15 - 422	
HWAD493	6654	647703	1 - 919	15 - 933	R56516, R13563, H69607, Z42062, and Z97989.
HWAD538	6655	709487	1 - 433	15 - 447	
HWAD526	6656	957347	1 - 1087	15 - 1101	AA24848, T60164, AA426628, AA173389, and AC007068.
HWADG01	6657	915567	1 - 412	15 - 426	AW022544.
HWADG26	6658	680182	1 - 410	15 - 424	
HWADG27	6659	958200	1 - 673	15 - 687	AW340327.
HWAD132	6660	698651	1 - 356	15 - 370	AC004223.
HWAD153	6661	727820	1 - 737	15 - 751	AI022632, AI022651, T91891, T84838, H47614, H47703, and N57905.
HWAD129	6662	690074	1 - 397	15 - 411	
HWAD102	6663	918986	1 - 302	15 - 316	AA380962.
HWADL36	6664	706697	1 - 868	15 - 882	
HWADM30	6665	868520	1 - 343	15 - 357	
HWADN19	6666	657528	1 - 374	15 - 388	
HWADN21	6667	670274	1 - 440	15 - 454	
HWADN46	6668	924888	1 - 711	15 - 725	T32685, R25015, T30407, AW401787, F07299, and Z44281.
HWADO54	6669	779136	1 - 562	15 - 576	
HWADP26	6670	680211	1 - 621	15 - 635	
HWADQ27	6671	682448	1 - 570	15 - 584	
HWADQ91	6672	693834	1 - 346	15 - 360	
HWADR47	6673	944042	1 - 320	15 - 334	D19587, AW022757, AW021357, H08415, AA099186, R51350, AA058389, H07129, T30155, AI810672, A7700760, AA291583, Z38445, AI93143, AA449107, AW383953, AI952893, AW025467, AI653296, AI823647, AI978760, AI890309, H13605, AW080154, and AB018298.
					AW292252, and AC002107.
HWADS43	6674	675454	1 - 367	15 - 381	AW341101.
HWADS53	6675	717544	1 - 339	15 - 353	
HWADV51	6676	916669	1 - 450	15 - 464	
HWADV82	6677	708688	1 - 403	15 - 417	
HWADW4	6678	722343	1 - 322	15 - 336	H26533, T77241, and AI206163.
HWADX46	6679	718647	1 - 556	15 - 570	AC003353, Z93341, AL135960, AI131016, Z82176, and AC004263.

HWADX62	6680	868509	1 - 497	15 - 511	R14731, AA425283, AA703818, AA180056, A1D04310, AL338884, AA669238, AA661084, AL355572, AL133861, AL653695, AA610644, AL754064, T07251, AL138119, AL464624, AL299352, AL086603, AL589378, T05002, R22196, AL823395, AL057560, AA342040, AC008039, AL005184, AC005685, AC000007, AC005808, AC007911, AL139054, AB001523, AP00127, AP000245, AP000245, AC006137, AC005067, AP000692, AC005326, AF124730, AF015416, AC004263, AL031680, AC006137, AL022165, AC007458, AC002366, AC004605, AL034395, AC010205, Z94865, AF124731, AL022158, AL049795, AL035413, AC004622, AC008044, AF030453, AC007372, AC005088, AL121757, AL049837, AC006581, AC006511, AC005594, AL049570, U80460, AC002228, AC005949, AC005730, AC005082, AC006121, AF111167, AC007688, AC003064, AP000532, AC002471, AC005374, AC005300, AC002422, AC004000, AC000115, AL117354, AL079342, AP000361, AP000151, AC005049, AP000009, AC006479, AC002060, AC009248, AC003358, AL035684, AC006557, AC002477, AC005295, AC005535, AC005225, AC008928, AL022313, AC004655, U52852, AC008038, U80439, AP000302, Z13025, M63543, U93163, AL008719, M63544, Z97630, AL008734, AF038458, AL008382, AC004242, AC004878, AC004797, Z97632, AL049636, AL031655, AL133241, AL022721, AC008126, AB000661, AL122021, AL033527, AP000555, AC004650, AC006369, Z84497, AC003072, AL035695, AL031311, AC004693, AC006120, AC004084, AC007227, AC016025, AL109865, AL109963, AC004897, AP000466, AC006285, U91318, AP000556, AP000514, L78833, AC010436, Z93241, Z97054, AC003687, AC005519, AL031427, AC004125, and AP001055.
HWADY59	6681	738874	1 - 602	15 - 616	AL821020, T60655, and AC005856.
HWADZ21	6682	670270	1 - 368	15 - 382	AL008725.
HWADZ84	6683	782682	1 - 308	15 - 322	
HWAEA55	6684	731094	1 - 311	15 - 325	
HWAEA60	6685	964384	1 - 390	15 - 404	AA603319, T99553, T82934, AW138561, AL393407, AA884256, AW269941, AA825272, D60479, and AL762108.
HWAEB19	6686	750811	1 - 407	15 - 421	
HWAEB94	6687	778009	1 - 203	15 - 217	AC005280.
HWAECE73	6688	852921	1 - 1336	15 - 1350	AA259167, AW275579, AA417330, AA417318, AW451308, AA259128, AL286274, T74279, F12417, F10034, T89018, AA021236, AL067832, AA505356, T23907, and AC006011.
HWAEF01	6689	915064	1 - 326	15 - 340	
HWAEK82	6690	868489	1 - 451	15 - 465	AW392670, U46349, AL119483, AL119418, AL119355, AL119319, AL119457, U46341, AL119324, AW372827, AW384394, AL119497, U46346, AW363220, Z99396, AL119484, AL119363, AL119391, U46350, U46347, U46351, AL119443, AL119444, AL119341, AL134538, AL119439, AL119522, AL119396, U46349, AL134902, AL119335, AL042975, AL134920, AL037205, AL134527, AL134536, AL119399, AL043029, AL119496, AL142134, AL134531, AL134533, U46345, AL043011, AL042984, AL042614, AL042433, AL134526, AL042544, AL043033,

					AL042965, AL042450, AL042542, AL142139, AL043019, AL042973, AL043003, AL119464, AL042551, AB020436, AR066494, AR060234, AR054110, A81671, and AR069079.
					R10255, and AC005940.
				15 - 473	
HWAEN20	6691	868490	1 - 459	15 - 473	
HWAFFD32	6692	850048	1 - 483	15 - 497	
HWAFC08	6693	958173	1 - 448	15 - 462	
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					T27535, AF106037, AF222340, AB011097, and AF183569.
					AW161021, AL870319, W46922, AB035173, and AB035174.
					AC005534.
					AB337376, W86648, N46466, AA522544, AL341807, AL651516, W86523, AL279721, AL245138,

HWAGD11	6703	965895	1 - 610	15 - 624	and AI262.80.
HWAGD58	6704	869383	1 - 839	15 - 853	AW403858.
HWAGD60	6705	926279	1 - 291	15 - 305	AA976889.
HWAGG79	6706	930876	1 - 274	15 - 288	N32456, and AI008730.
HWAGI49	6707	838759	1 - 574	15 - 588	AW027612, AI768868, AI37456, and AF015416.
HWAGI95	6708	888403	1 - 983	15 - 997	295152.
HWAGL53	6709	842011	1 - 639	15 - 653	AI668608, AI820783, and H25907.
HWAGM33	6710	888685	1 - 1127	15 - 1141	AW027021, W60174, AW385598, AW070853, H11581, H23044, AW028265, R55140, AA018982, R55003, AA330790, N80215, and AC004408.
HWAGX37	6711	959586	1 - 648	15 - 662	AA496792.
HWAGY05	6712	931001	1 - 679	15 - 693	AA381062, and AP000497.
HWAGZ22	6713	868523	1 - 554	15 - 568	AI337112, AW157251, AI359543, AW025067, AA033852, AI923582, AW173477, AI469426, AI37164, AI248222, AI914411, AI218210, AW163254, AW264530, AA058937, AA846593, AI217342, AA307853, AA865741, AA937115, AA007277, AA482294, W76232, AI284228, AA007278, AI654340, AW242373, AA861264, AI694032, AI362710, AW029549, AA741378, AI807032, AI589216, AI602432, W72995, AI683775, AA813389, AW083309, AI280797, AA782972, AW002572, AA4664320, AI919243, W70165, AA461498, AA354364, AA460572, AI216403, T32711, AI566648, AA482207, W70107, R41710, AA100835, AA314521, AA355060, Z40294, C03019, C04495, AA354171, AW237755, AA361131, AA337563, AA897525, AI040822, R18164, AA897166, AW387825, AW387866, AW387873, C01307, AW387848, AA832384, AW381883, AW381787, AA330348, AF113538, and AI137375.
HWAH594	6715	909667	1 - 533	15 - 547	AA004442.
HWAI802	6716	918215	1 - 595	15 - 609	
HWBAB43	6717	715110	1 - 410	15 - 424	AI333255, AA453914, T83122, AA227768, AA534795, AW129554, AW129687, AI378305, AI191481, AF042810, AF042799, and AF042800.
HWBAB69	6718	582109	1 - 375	15 - 389	AA916171, AC003049, AC004917, and AC005785.
HWBAC22	6719	823086	1 - 1044	15 - 1058	AI018289, AA909162, AI472103, AW410437, AA303718, AA102327, N28787, AA059290, AW410431, AA054210, HB6396, HB6516, AA019783, AI684587, R28900, AI117550, AF113127, AF151877, and AF161526.
HWBAL44	6720	959449	1 - 553	15 - 567	
HWBAN54	6721	729329	1 - 380	15 - 394	
HWBAQ16	6722	868363	1 - 1070	15 - 1084	AI028018, T18971, and Y15381.
HWBAR44	6723	715963	1 - 397	15 - 411	AI140130, and AA719976.
HWBAR90	6724	788700	1 - 631	15 - 645	

HWBAS92	6725	960197	1 - 723	15 - 737	AW131438, and AA176971.
HWBA306	6726	935032	1 - 103	15 - 117	
HWBA339	6727	630220	1 - 453	15 - 467	AC005037.
HWBA251	6728	707033	1 - 401	15 - 415	
HWBBA64	6729	927809	1 - 448	15 - 462	
HWBBA83	6730	775401	1 - 557	15 - 571	AW178515, AW178491, AW178488, AW178658, AW178490, AW178544, AW178489, AW178541, and AW178487.
HWBBB48	6731	559708	1 - 236	15 - 250	
HWBBE01	6732	851029	1 - 385	15 - 399	AL020996.
HWBBF31	6733	868359	1 - 300	15 - 314	AF110908.
HWBBI20	6734	669491	1 - 365	15 - 379	
HWBBI54	6735	971547	1 - 471	15 - 485	
HWBBL78	6736	723183	1 - 661	15 - 675	AW070392, T86121, AI919539, U54727, and T91169.
HWBBM28	6737	866259	1 - 410	15 - 424	AW378979.
HWBBQ46	6738	718858	1 - 640	15 - 654	R09834, and AF067844.
HWBBQ40	6739	606971	1 - 313	15 - 327	
HWBBQ86	6740	656704	1 - 446	15 - 460	AA744115, and AA744222.
HWBBR65	6741	747723	1 - 356	15 - 370	H57595, AC010205, and AC005409.
HWBBR78	6742	663728	1 - 342	15 - 356	AC004098.
HWBBY03	6743	868346	1 - 417	15 - 431	F34850.
HWBBY59	6744	682344	1 - 334	15 - 348	
HWBBY83	6745	771349	1 - 454	15 - 468	AA906879, AW207599, and A1240477.
HWBBW11	6746	966665	1 - 569	15 - 583	D20490, AA604681, AL049557, AL137199, and AL137198.
HWBBX08	6747	860880	1 - 642	15 - 656	
HWBBY01	6748	916036	1 - 906	15 - 920	AW339320, AI697885, AI150606, AA213437, AA243510, L44367, AW339015, and AC007298.
HWBBY74	6749	711633	1 - 715	15 - 729	AC007685, and AC007284.
HWBCA14	6750	768667	1 - 355	15 - 369	
HWBCA22	6751	674236	1 - 458	15 - 472	
HWBCA92	6752	712731	1 - 538	15 - 552	
HWBCB83	6753	784189	1 - 304	15 - 318	AL119762, H07953, F08248, AI307608, AI754336, T74524, AI696962, CI5363, AI369580, AI821714, AI792133, AI791913, AA528559, AI037683, AA283730, AI669589, AA715814, AI135357, AA838190, AI431303, AI076228, AI580250, H65400, AI821785, AI793172, AI793209, AW264934, FI2561, A W020992, AI696955, AW302705, AA579205, AI254316, AI609972, AW302659, AI061313, AA602906, AA829036, AW19262, AW020599, AA629992, AA507824, AI887235, AA297666, AA722372, AI244127, AA663201, AI135696, AI733856, AI038893, AA857486, AI138396, AA502991, AI079645, AA613227, AA574442, AA484267,

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HWBCN99	6759	868325	1 - 809	15 - 823	AC007032.
HWBCN55	6760	715064	1 - 548	15 - 562	AA508891, AA364869, AL537814, AL039257, AL823679, AA774098, AL798242, AL065031, AL064786, AP000153, AP000011, AC002301, AC004882, AC006126, AC005015, AC002150, AC003982, Z83840, AC005329, AC007136, AC003101, AC007283, AC004967, AC004883, AP006092, AL096701, AL031685, AC006930, AC006146, AC004185, AL049569, AC005280, AP000501, AC006312, AL035587, AP000247, AC005726, AC005484, AF001548, AC006487, AC005156, AC005231, Z84469, AC005844, AL121653, AC002073, AC004552, AC004895, AC004983, Z93017, AC005562, AF111168, Z98743, AC005520, AC005049, AC007066, AP00509, AP000115, AC000379, AC005183, AC005004, AL033527, AC003104, AC004765, AC004890, AC005914, AC004263, AC005081, AC004383, AC007041, AL133163, AL049830, AL121658, AC005808, AC004099, AC004084, AL022476, AP000252, AC002381, AC002312, AC007298, Z99716, AC005527, AC004032, AP000512, AC005089, AC005300, AC005954, AC004985, AD000091, Z98884, AC005006, AL008718, AF003626, AL022330, AC0050512, AP000556, AC005921, AC004878, AL049869, AC005531, AC004832, AC005940, AL031283, AC006388, AC005971, AC005837, AL022165, AL008582, AC005182, AP000557, M89651, AC003108, AC003072, AL035072, AC008115, AC006430, AL137191, AC005409, AC004651,
HWBCQ10	6761	964233	1 - 802	15 - 816	

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HWBC029	6762	943720	1 - 669	15 - 683	AL022098.
HWBCS21	6763	960025	1 - 499	15 - 513	
HWBCS66	6764	765986	1 - 799	15 - 813	
HWBCU82	6765	955858	1 - 368	15 - 382	
HWBCW04	6766	925649	1 - 530	15 - 544	
					AW192334, AA845292, and AL034397.
					AA758151, AW303196, AW369785, AL820920, AA478048, AL821670, AA478209, AL874096, AW301350, AA584125, AL135357, AL601125, AW022897, AA100718, AL819140, AA601202, AL038606, AL044340, AT733129, AA719292, AL683131, AL873990, AW022655, AA088327, AA522897, A972809, AL557808, AL345797, AA376014, AL039375, BS1018, AA584733, AL073336, AA577824, AW023662, AW274349, AA631517, AA912287, AW265032, AW419293, AL048135, AA630456, AL11034, AL1254913, AL031985, AC005320, AC003037, AL345007, AA652790, AW079761, AL421841, AL254913, AL031985, AC005320, AC003037, AL009172, Z84469, AC010169, Z81365, AC004894, Z99127, AC006479, AF064863, AC002564, AC000353, AP000336, AC004143, AC007011, AC005018, AC018767, Z69838, AL031681, AC004388, AC009028, AC005668, AC004478, AL050321, AC005277, AC006251, AC004972, AC005075, AC007216, U95742, AC005003, AL121578, AC007198, AC003071, AC007314, AC002059, AL031656, U85195, AC006599, AC004088, AE000658, AP000555, AC002982, AC004856, AC003104, AP000035, AL035697, AC004148, Z97053, AL135960, AL131016, AC005288, AC004458, AC004694, AC005994, AL021397, AL022165, AC002565, AC005747, AP000223, AL031291, AL022326, AC005690, AC005245, AC005251, AL022319, AC003658, AC004240, Z84484, AC004408, AF015148, AF020662, AL133445, AL031846, Z93244, AC008038, Z98304, Z98051, Z92910, Z83846, AC004967, AC008041, AP000694, AC004087, AC004112, AC009509, AC005011, AF007263, AL035072, AC005952, AC006607, AC003003, AR036572, U91328, AC007713, AF196779, AL109847, AL031055, AC004675, AC005486, AC008967, AF001549, AL133243, AL031283, AC004147, AC004051, AC007283, AL031281, AC005940, AC002990, AC005104, Z83844, AL121580, AL022336, AC011422, AC007193, AL031654, AC004648, AC007226, AF129756, AC005019, AC002385, AL021878, AC007157, AL078604, AF029308, U78027, AC007292, AL239322, U91323, AC006075, AC007277, AC007686, AL049692, Z82198, AC005411, AP000697, Z84466, AC006333, AL022067, AL031053, AC008372, AC004079, AF090940, and AL035422.

HWBCW88	6767	882592	1 - 1321	15 - 1335	AI990120, AA010663, AA115329, AA142893, AA115240, AW451010, AA143167, AA947167, AA479671, AI807656, AI003817, AA862814, AA834865, AA889038, AA021652, AI338488, AA035167, AA193491, AA193487, AC007376, AF111169, and AB028959.
HWBCW90	6768	731395	1 - 556	15 - 570	AI022150.
HWBCY30	6769	828318	1 - 532	15 - 546	AW274000, AI768670, AI291098, AW7044308, AW292871, AI333095, AI763411, AI277756, AI277757, AW295995, AI640134, AI138941, AA833791, AA928138, AA768096, W44749, AI075028, N26246, AA213455, AW004641, AA210688, AA724426, AA973149, H18543, AA827829, AA743465, H09231, R25082, AP28653, TI0351, R33461, AI364687, and Z46059.
HWBDL50	6770	724145	1 - 593	15 - 607	
HWBDN24	6771	963498	1 - 1027	15 - 1041	AA486469, AA410963, AI791905, AA459612, W31955, AW137789, AI739525, AW204945, AW291807, and AI388555.
HWBDP31	6772	697705	1 - 414	15 - 428	
HWBDR66	6773	750586	1 - 510	15 - 524	
HWBDS89	6774	771950	1 - 432	15 - 446	AC004381, and AC005820.
HWBDT15	6775	659039	1 - 217	15 - 231	
HWBDW71	6776	597259	1 - 424	15 - 438	AC009263.
HWBEX72	6777	950702	1 - 261	15 - 275	AW006846.
HWBEI17	6778	924913	1 - 197	15 - 211	
HWBEI53	6779	968493	1 - 106	15 - 120	
HWBEL53	6780	727617	1 - 342	15 - 356	AC004916, AC006328, AI133216, AC004842, AI031259, and AC004908.
HWBEL70	6781	735390	1 - 443	15 - 457	
HWBEL85	6782	954600	1 - 294	15 - 308	
HWBEV44	6783	716215	1 - 536	15 - 550	NZ8544, and H99861.
HWBEV94	6784	788574	1 - 709	15 - 723	AI591698.
HWBEX27	6785	682583	1 - 475	15 - 489	R98173, AA194819, AW338123, AW152107, AI242261, F05684, AI824448, AF205935, AB011090, and I41142.
HWBEY38	6786	709497	1 - 418	15 - 432	AA772370, I127788, H91330, AA644090, AA676592, AA613257, AA551181, AA463590, AC005914, AC009516, AC007216, Z68756, AC005954, U95742, AC006273, AC004477, AC005736, U91326, AI009610, AC006241, Z84480, Z85986, AC012384, AI022323, AC005899, AC007993, AP001060, AC002115, AI139054, AC005529, AC009247, AC004019, AC007766, AC005081, AC005620, AC004967, AC005015, AC006468, AC005037, AI035587, AC005971, AI022721, AI022318, AC006441, AC002543, AF111167, AC006449, AC005527, AI021918, AC006001, AC005520, AF129756, AB023050, AI022320, AI109628, AI109952, AC004812, AI050318, AC007386, AI133245, AC004125, AI132712, AC002492, AC007226, AD000092, AC004929, AP000557, AC002312, Z93930, AC004491, AC004462, AC004099, AI031295, AC005696, AC003109, AC007298, AI034420, U83195, AC007676, AC004832, AF053356.

U91323, AL031846, AC004883, AP000967, AC005940, AP000505, AC005264, AC004874, Y14768, AC007363, Z99716, AP000511, AL035086, AC006352, AC005288, AP001548, AE000658, Z93023, Z98051, AC003684, AC005619, AL031003, AC005231, AC006120, U52112, AC004139, AC007358, AF200465, AF207550, AC005065, AC004659, AF111168, Z97054, AC007011, AC005839, AL020995, AF124523, AF134726, AL049869, AC002544, AL13244, Z93017, AC002288, AC005667, AF109907, AL022336, AL133448, AL034423, AC018633, AD001527, AB023049, AC000353, AL021397, AC002350, AC006344, AL031432, AC004148, AC005225, and AC004386.				
HWBEZ47	6787	719940	1 - 397	15 - 411
HWBEZ69	6788	664699	1 - 420	15 - 434
HWBEZ90	6789	922008	1 - 473	15 - 487
				AW151761, AA740571, AA741403, AA633197, AA657910, AA225100, AA664248, AA527109, AW392414, AA768179, AW341882, AW019964, AL137946, AA774006, AW238495, H43183, AW065880, AL499954, H65697, AA662629, AA807704, AL671077, AA550959, H94979, AT754721, AA847427, AL871691, T05617, AA847508, AL047480, AI223968, AT791659, AA302682, AW407632, AL860535, AW104163, AA595656, AA553570, AA515172, AL630413, AA329535, AA662431, R990076, AL859906, AL636422, T40550, AA862075, Z32248, T02817, T05684, AW132097, AL267356, AW169124, AW020875, AL653783, AA402113, T56181, AA225023, AW069412, AL859744, AL567391, F32213, AA015948, R87135, AA714073, H86579, T46997, AA368329, AL047467, AL453160, AL564294, AL78437, AW079737, AA714110, AA831997, R94909, AA225795, AA323644, AA502110, AL471455, AA484892, F32705, AL632765, AL288033, AL267450, AL283938, AL471467, AL826761, AA487829, AP728890, N79228, AL039309, N71579, AL536834, AL561054, AA810138, AW085790, AA716460, AA586433, AW272740, AL583936, AA599199, AT754170, AW338876, AL356440, AW083934, H16875, AA156147, AL635609, H15241, AL687343, AL201668, AL370302, T03928, AL249688, AL590404, AW008184, AA678930, AL927261, AA653291, AA076418, AA566084, AA640252, AL694178, AA492105, N29936, AA864426, N63891, AL821249, AL187760, H91062, AA07424, AA828045, AA736447, AL355007, AA579281, AW128881, AA837771, AL038304, AA742775, AA748102, AL859438, AT754567, AL569100, AW192599, R34070, AL816136, AL583291, AT754105, AL369076, AT755214, AL354602, AL679390, AL679898, AA297776, AA515924, T94072, AL135639, AA741301, AL080307, AL036182, AL048825, AA588314, AL024379, AA569220, AA557945, N20034, F26713, AL128475, AA507526, AW190484, AA714062, H78888, AL799260, AL709180, AL866996, AL838632, W63553, AL246996, AA018923, AA862029, AC003029, S77605, AC007546, AC002312, AC007664, AC004486, AC007276, Z63710, AC003969, AF161528, AC005066, AC005399, AL021807, AC004799, AC002404, X64467, AC003657, Z98304, AP000703, AC018633, AL031284, AP000702, AC004975, AL031597, AC007510, AC004794, AC002468, AC005157, AC006241, AC004149, AL049872, AL121825,



AC019014, 281365, AC006388, Z81357, AL049748, Z85987, AF196972, AC004531, AC002380, AL031659, AC010200, AL133371, AC005082, AL050337, AC005231, AL031230, AL023803, AC005914, U63630, AL031846, AC005954, AC005031, AC005546, AB032978, AC005696, AL109753, AC009263, AF196779, Z83845, AC009501, AC004883, AL031393, Z83851, AC004999, AL024494, AC004893, U80017, AC006511, AC009363, Z84467, AC004601, AC005684, AC003956, AC004409, AC004859, AC007114, AC007565, AL031985, AF060929, AC005015, Z95889, AF064861, AL035697, M17260, AC005620, Z93244, AC004383, Z99716, AC003982, Z83826, AL022721, AL049713, Z98200, AL096791, AL049869, M22970, AC002126, U96776, AL096818, AL023575, AL035682, Z84481, AC000085, AC005793, AC004685, AC004890, AP000324, AC003010, AL035246, AC007225, AC006501, AF111170, AL021546, AC004678, AL031281, AL022311, AL035414, AC002072, AC006312, AL022330, M29930, AF067572, AB000876, Z49866, AC004181, AP000506, AP000695, AL049760, AB000882, AC012099, AP000696, AC005971, AF015720, AC007686, AC006543, U43572, AC006077, AC004036, AF006501, AL049653, AP000121, Z74617, AF118808, AL031431, D89927, AL133353, AC007387, AC005516, U85195, AF139658, AL031680, AL136168, AP000082, AC004692, Z84469, AC006512, AC009399, U47924, AL035659, AC004032, AC000025, AE000658, AC004796, AC004869, AF055066, AJ29041, AC007401, Z69705, AC006079, AC006058, AL008582, AP000252, AP000053, AP000168, AC005058, AC005619, AC004223, AL049561, AC008544, Z99129, AB023050, AL035461, AC004354, AF124523, AC005759, AC006125, AC004212, AP000512, U78027, AC006011, Z83822, AC004754, M84472, AB020696, AP000301, AF109907, AC005409, AP000113, AP000045, AC004583, AL035448, AL078638, AC005261, AF005089, AL050307, AP000212, AP000134, AC004941, AL021154, AC007237, Z94044, AC006930, AC005225, AL035422, AC002350, AF097485, Z73429, U95626, AL132668, AC004017, AL035400, AC007687, AC006992, AP000504, AF004690, Z95331, AC004674, AL109623, AL049590, AF196970, AC004131, Z68164, AL031904, AC005332, AP000031, AC005348, AC005940, AL135744, AC007226, and AL109963.					
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HWBFE76	6791	769769	1 - 407	15 - 421	
HWBFG09	6792	625162	1 - 200	15 - 214	
HWBFL35	6793	722921	1 - 346	15 - 360	AL037091, AL866416, AL934536, H84364, AW380728, AA411978, AA411937, R56481, AL128370, AL000242, AW295845, AA375919, AL432666, AL432644, AL623302, AL431307, AL431316, AL431238, AL432650, AL431315, AL432653, AW081103, AL431323, AL432654, AL431321, AL047611, AW058275, AL004779, AL431235, AL1134524, AL042655, AW103606, AL043166, AL431246, AL042853, AL590043, AL500714, AW151974, AL042533, AL872315, AL682915, AL042787, AL892208, AL135012, AL866786, AL042508, AL042842, AL042488, AL043089, AL043295, AL537677, AL494201, AL500659, AL042931, AL866465, AL550088, AL893866, AL815232, AL801325, AL500523, AL538830, AL887775, AL582932, AL923989, AL872423, AL284517, AL491710, AL500706, AL45237, AL491776, AW151138, AL889189, AL521560, AL500662, AW172723, AL539800, AL284509, AL538885, AL440263, AL889168, AL866573, AL633493, AL434256, AL866469, AL434242, AL805769, AL888661, AL284513, AL888118, AL599991, AL436429, AL866484, AL555779, AL889147, AL581033, AL71228, AL440252, AL046356, AL860003, AL610557, AL045327, AL242736, AL043321, AL828574, AL887499, AL539781, AL539707, AL559957, AW089557, AL521571, AL884585, AL042515, AL047675, AL040207, AL804505, AL815239, AL866488, AL432677, AL582912, AL623736, AL890007, AL445256, AL932620, AL041862, AL866488, AL432677, AL582912, AL623736, AL047675, AL284517, AL927233, AL432656, AL521551, AL285439, AL654286, AL440238, AL042802, AL924051, AL567971, AL539260, AL045891, AL702065, AL885949, AL285419, AL866381, AL866461, AW074057, AL567953, AL815150, AL446495, AL952433, AL889191, AL867068, AL225248, AL043278, AL71251, AL538271, AL866510, AL798359, AL282249, AL698352, AL475298, AL371229, AL539771, AL923046, AL890472, AL71237, AL043091, AL045328, AL042551, AW151136, AL039390, AL671642, AL357664, AW151979, AL582944, AL440260, AL648567, AL500326, AL433157, AL474699, AL866458, AL047422, AL521596, AW192487, AW132015, AL080007, AL888665, AL048951, AW151132, AW193598, AL433160, AL955221, AW17139, AL366900, AL554821, AL042832, AL275175, AL440236, AL122101, Y17793, AL133053, AL133049, AL133076, AL133074, AL049422, U75932, AL133655, U30290, EL3998, S36676, AL122049, AC004213, AL133015, AL133608, AL035519, AL133070, AL034821, AL135051, AL022723, AL133607, AL133015, AL133608, AL015970, AL133020, Y14634, AL002985, U57352, AL726531, and Z69719.
					AA830979.
HWBFL96	6794	708955	1 - 392	15 - 406	
HWBFLM58	6795	735701	1 - 367	15 - 381	
HWBFLM78	6796	773289	1 - 544	15 - 558	

HWBFB30	6797	691611	1 - 262	15 - 276	AL031733.
HWBFB69	6798	754729	1 - 491	15 - 505	AL049636.
HWBFB78	6799	701904	1 - 134	15 - 148	AA747998, AI815031, N67227, C01451, AI223999, AA831672, AW297416, AI371399, AA994323, AW439548, AW235171, AA063573, AW339548, AI635436, AI823872, R33402, AI536057, AA825399, AF130247, and AF165138.
HWBGB47	6801	948714	1 - 290	15 - 304	AA287163, N47440, AA002012, AA431617, AA259159, AA091603, N33783, R60031, AI134088, AI134530, AI134519, AI119439, AI119484, and AI045147.
HWBGBD16	6802	924830	1 - 600	15 - 614	
HWBGBF15	6803	659687	1 - 236	15 - 250	
HWBGBH01	6804	915603	1 - 324	15 - 338	
HWBGBI13	6805	656308	1 - 366	15 - 380	AA715873.
HWBGBI30	6806	691511	1 - 298	15 - 312	AI208828, and AI049453.
HWBWA206	6807	933736	1 - 394	15 - 408	
HWBWDI03	6808	922463	1 - 554	15 - 568	
HWBWEF06	6809	933697	1 - 605	15 - 619	
HWWFEN10	6810	961741	1 - 618	15 - 632	AI564440, AI792916, AI953802, AI380089, H05684, AW130075, AA745681, AA256184, AC006129, AC007065, and Z97054. AA618153, AI924667, AI345256, AA804838, AA829199, AW022796, AI871940, AA578245, T03613, AA558134, AI149177, H94598, AI049999, AA364147, H86399, AA648605, AW028376, AI281622, AI254267, AI753969, R79396, T16147, AI282322, AA657808, AA984891, AI158505, AW268090, AA947352, AI640905, AI828721, AA196287, AA569206, AI744890, AA084148, AI434103, AI884404, AA449825, W27084, AA643768, W02419, AA367920, AW023390, AA825954, F16848, AI361401, C14724, AA489897, AW085626, W45215, AI002863, AI337612, R83710, AA608675, H83955, AC007793, AC003973, AF001549, AC005516, AC005231, AC009247, AC002544, AC002416, AI132987, AC002449, AL022320, U91326, AP000952, AC007981, AC004663, AC004812, AF000530, AC008018, AC005412, AC005288, U80459, AC016023, AC016026, AC007346, AC0020663, AL009697, AC007066, AC005666, AP000356, AI031662, AC008132, AC008372, AC007845, AL080243, AC007263, AL049776, AC002517, AC004841, AC000134, AC006020, AC005257, AI022326, AF165926, AI132641, AC010849, AI021546, AF207550, AC005899, AC007565, AC005484, AC012627, Z83844, AI035400, AF124523, AP000221, AF111169, Z97184, AC005180, AC000353, AC005914, AC002091, AC004895, AL109963, AI031680, AC012330, AL023879, AL022322, AC005067, AC007051, AC009516, AL109827, AC003002, Z73359, AC004055, AC004771, M57678, Z82190, AC007052, AC005740, AC007919, AC005488, AC002077, AC001231, AC004263, AI246003, AF205588, AC005225, U80017, Z83856, AI117337, AC005574, AF196971, AC005520, AL031733, AC006023, AI031281, AI050341, AC004797, Y18000, AI109627, AI133245, AI031432,

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HWWEF56	6811	951811	1 - 551	15 - 565	AI4339704, AI377300, AA910231, AW297398, AA907716, AA287041, AL048499, AI934011, N95189, AW151979, AL037043, AI414066, AI336494, AI683157, AW081689, AI357672, AL045986, AL137476, AL080147, AF061981, AF007142, A21103, AL137478, AL133084, AR038854, AR055519, and AF054988.
HWWEFA12	6812	968958	1 - 451	15 - 465	AW392670, AW363220, AW384394, AW372827, Z99396, AL119341, AL119396, AL119497, AL119443, AL119457, AL119324, AL119522, AL134902, AL134528, U46347, AL119483, AL134533, AL134527, AL119399, AL119335, AL119418, A81671, AR060234, AR066494, and AR069079.
HWWEFK07	6813	951819	1 - 490	15 - 504	AC022517.
HWWEFL04	6814	961739	1 - 325	15 - 339	AA936399, AI379676, AL119511, AL119457, AI783569, AA693331, AI800370, AL079794, AA128660, AI241678, AI468959, AI251221, AL043152, AI254715, AI491904, AI571699, AW090131, AI440238, AI868204, AW058233, AW080402, AW409821, AI524654, AI436429, AI582551, AI540676, AI690411, AI472767, AW149219, AI564716, AA427700, AI042382, AI557104, AI758437, A4769102, A614517, AI690813, AI421662, N95566, AI244105, AI630927, AI814896, AL043168, AL046261, W46513, AW090387, AW081661, AI45688, AA421957, AL119399, AL040169, AI921132, AI564448, AI537274, AI687568, AA424596, AL038445, AL120706, AL118781, AI887775, AW167918, AI288328, AW162194, AW242197, AI636811, AI952433, AW236186, AW083572, AA190341, AA665669, AA743385, AI416005, AW074199, AI573026, AI219380, AA464646, AI285514, AI584130, AI811811, AI538850, AI583567, AW079336, AL120736, AW168296, AL045903, AI680498, AI348777, AI335426, AI686749, AW176256, AW083111, AA830609, AI866465, AA831987, AI520897, AL042542, AI345013, AI499573, AI697359, AI273856, AW130129, AI921167, AA743354, AI440263, AW079432, AL043355, AW169213, AI525569, AA437338, AI280655, AW026905, AW410090, AI380723, AL119324, AI635079, AI473708, AI660903, AI925685, AW024185, AL120987, AI280756, AI299677, AI370322, AI440444, AW081383, R36363, AI668180, AI653061,

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HYAAB66	6815	463413	1 - 312	15 - 326	AF145233, B05522, AF087943, X00340, AF115392, ZB2022, A1238278, X84990, A1120208, S69510, AL000140, B01614, E113364, X72889, A1117629, L04859, X91970, A1137463, AL000886, AF078844, AB016226, U99292, AF119336, Y11254, AF038847, A83556, AF081366, A1122106, S69383, Y09972, AF199509, AF113676, K04257, and I25048.
HYAAC60	6816	731763	1 - 538	15 - 552	
HYAAD03	6817	923797	1 - 437	15 - 451	
HYAAD67	6818	664597	1 - 431	15 - 445	
HYAAD95	6819	920280	1 - 1417	15 - 1431	AW404921, A1769693, A1949630, A4813912, A1651987, A1762498, AW405307, A4465011, A1635250, A4432286, AW237270, AW341847, A1962755, AA814312, A1440085, AA428631, AW405306, A1866838, AA445988, AA455291, AA984896, AA748641, A1696088, T78905, AW050810, AW406430, A1084063, T78957, T96418, A1005501, A1B32635, R11250, R02626, AW408138, R11198, R01685, T96502, AA767241, AA865672, A1833849, and AA299913.
HYAAF33	6820	915050	1 - 439	15 - 453	AA459128, AW245218, A1792687, N48381, W37954, R75759, and A1721858.
HYAAH26	6821	681251	1 - 438	15 - 452	AA834566.
HYAAH36	6822	947242	1 - 428	15 - 442	AL109847.
HYAAI55	6823	674591	1 - 243	15 - 257	N71364, N71313, and AA370184.
HYAAI67	6824	706512	1 - 252	15 - 266	AC006064.
HYAAJ36	6825	744792	1 - 401	15 - 415	AW303286, A1208356, AW341447, AW269000, A1215965, A1932361, and A1001927.
HYAAJ89	6826	678728	1 - 555	15 - 569	AW183775.
HYAAN31	6827	697590	1 - 547	15 - 561	AC002364.
HYAAO39	6828	599000	1 - 398	15 - 412	AC002375.
HYAAR17	6829	662426	1 - 472	15 - 486	AC005076.
HYAAR95	6830	862585	1 - 676	15 - 690	AA750059, A153533, AA8326004, A1174651, AA847948, WA5298, WA5283, A19090334, AA764893, AA446601, A1282832, A4713716, AA847984, AW274101, AW274349, A1949107, AA501784, A174140, AA112458, AA579736, AA708678, AA570227, E17700, A1074265, A789115, AW131034, Z93017, AC006312, A1031282, AC005480, AC005932, A1031283, AC005529, Z83840, AC006965, AC009516, AC009576, AC009053, AC005327, AC005746, A1031387, AC006285, AP000512, AC002565, A1117330, AC004384, A11133382, AC005748, A1132712, AC005911, AC005971, AF999930, Z95114, AP000557, AC005837, A1031848, A1132712, AC005911, AC005971, AF999930, Z95114, AP000557, AC005837, AC007308, AC005409, U96629, AC005180, AF734726, A1024507, A1132992, U95742, A1031311, AC004019, A1035417, AC005777, AC006130, AC036572, U91328, AC007666, AC006539, AF111168, AC000052, AF196779, AC004531, U80017, A1096794, A1008582, A1217554, AC007216, AC005231, AP000354, A1049709, AC005225, A1092239, A1135744, AC004705, AC007993, AF001550, AC005043, AC004475, A1031563, A1109963, AC005491, AC004694, A1034420, AC005772, A121825, AC004876, A1003147, A1049830, AC005921

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HYAAS08	6831	926017	1 - 299	15 - 313	AL159040, AL1984168, AL1915081, AW040543, AL242994, AA247480, AL500645, AW275432, AL733523, R72363, AL610243, R89560, AA595661, H81143, AA358064, AA487053, AL682899, AA730872, AL521042, AA935767, N94115, AA502673, AA484892, N26866, AL570067, AA845690, AL271693, AL048969, AA225141, AL635889, AL888017, AA199578, AA177130, AL216151, AL302917, R61887, AA720582, AL282488, AL292275, AA640104, AA669165, AW072963, W44797, AL307563, P00574, AL280535, AA372053, AA829565, AA507623, AL311796, AL866911, AL040051, AL751341, AL926104, AL889995, AL452836, AL023500, N24909, AL039471, AL500563, AA634786, AA493808, AA015948, AA054085, AA910125, AL521525, AA018207, AW020094, AL031759, AA085106, C15966, AA324108, AL523205, AA452887, AA342029, AL969095, AA516242, AW117860, AL121174, AW008089, AA402129, AA452887, AA569235, AC004447, AC008115, AC008154, AC003109, AC005037, AL050318, AC005730, AL111168, AC006597, AC004796, AC002504, AC002349, AL022313, AL031432, AL049733, AC005303, AC004707, AF003626, AC006441, AC005339, AC005828, AL109628, AC007637, U07561, AC003013, AL008716, AL031433, AL031662, AF001549, AC004112, AC005015, AC004081, AP000402, AL049780, AL022721, AL050307, AC002357, AC005808, AC002059, AL022326, AC004104, AL133448, AC005231, AL035457, AC003010, U91326, AC002544, AC004033, AC006285, AB004907, AC009247, AC005500, AC005994, AC002357, AC004659, AC004673, AP000501, AC002036, AL009181, AL133246, AC008904, U82668, U91334, U80460, AC004125, AL096755, AL031657, AF217403, AC003108, AL035413, Z98743, AL035072, AC016025, AC004533, AC004590, AL031286, AC005410, AL024498, AC007371, AL034451, AF207550, AC006468, AC005695, AL035659, AL035420, AC005914, Z82976, AL023575, AC005325, AL031228, AC005358, AC004685, Z73979, AP001065, AC004491, AC002310, AL0008637,
HYAAT50	6832	724047	1 - 572	15 - 586	

					AC007055, AC005632, AC0049636, AC002472, AL022323, AC001228, AC004893, Z97632, Z98044, AC005841, AC005913, Z83840, AC005911, AC004950, AC003043, AC000557, AC005049, AC002077, AC005666, L40817, AC002546, L78810, L44140, AC004821, Z98941, AC004968, AC004019, AC005377, AC004139, Z95118, AC003007, Z98948, Z82201, AC007911, AC004525, AC004050, AF165926, AL139054, AC007688, Z68886, AC005280, AL031587, AC005874, AF134471, AC006076, AL035455, AC005326, AC007731, Z94721, AP000049, AC005082, AC002390, AC005154, AC004699, AC004099, AP000563, AF053356, AP000141, Z96810, AC007056, AP000311, AC007435, AC007664, AF003529, U96629, AC005328, AC004257, U75931, AP001068, A1011930, Z93930, AF036405, AL133163, AL031295, AC006511, AL035422, AL035438, Z98051, AC004876, AF044083, AL049873, AC000090, AC002319, AC004500, AC005458, AL136295, AP000238, AL008725, AF000094, AP000211, AP000133, AC0012384, AC006369, AC004223, AL023803, AC005479, AC002091, AP000211, AL049757, U93305, AL035695, AC004009, AP000088, AC007845, AL035086, AC002420, Z98172, AP000353, AL031311, AC006505, AC006251, AC020663, AC004000, AC009509, AC002553, AP003147, L48038, AF064861, U29895, AC005212, AC006121, AC005520, AL049539, AC005179, AC004831, AC004650, AP000338, AP000216, AF196972, AC007686, AC005191, AC002054, AC004967, AC006538, AC006111, AC005907, AC004150, AC005796, AC005391, AC004842, AL096791, AL035696, Z84466, AL049830, AC006080, AL121652, AC004686, Z93848, Z97183, AC004913, and AC003665.
					AA078383.
					AL380869, and AL492476.
					W68830, W79652, Z82188, and AF077208.
					AA165103, R66289, R65738, AA576361, AA225996, AL825399, AA557529, AA225997, AP934434, AL722388, AB000616, and AB000628.
					A W080842, AL126237, AL738708, AL288602, AL200312, AA033525, AA070152, AA033526, A W293916, AA748547, AW182578, AA961647, AA808104, AA410505, AA884100, AL655980, TT1568, AA580797, AL004853, AA975024, T82022, AL674097, AA988905, AL133609, AL137420, and Z94722.
					W32758, A W026680, AB014536, and AF077226.
					Z97988, AC0053823, AC006441, AC004941, and AL034429.
					R27814, AL821365, N31533, and AF068302.
					R59561, AA513678, and AC005037.



HYABG22	6846	811950	1 - 280	15 - 294	AA883214, F11291, AW402414, AA099843, AA215472, AW341298, A1298948, A1043290, and A1014566.
HYABL55	6847	678864	1 - 460	15 - 474	AA5451063.
HYABP53	6848	971448	1 - 1437	15 - 1451	AW295244, AW383680, AA291031, AA836103, AA825935, AW383670, AW451843, AW383673, AW29625, A1377702, A1347054, A1119324, A1134524, A1119457, A1431323, A1110399, AW392670, A1432666, A1042544, A1432644, A1623302, A1431307, A1431316, A1431238, A1431230, A146347, AW081103, A1432677, A1432653, A1432654, A1432650, A1431353, A1431328, A1431235, A1431312, A1431321, A1431315, A1432655, A1431310, A1431246, A1431231, A1431257, A1119443, A1431347, A1043003, A1119484, A1432657, A1431247, A1431354, A1047729, A1042533, A1431350, A1119439, A1431318, AW384394, A1042842, A1042931, AW372827, A1791349, A1129223, A1432661, A1134153, A1042655, AW363220, A1042508, A1042420, A1042853, A1119319, A1119418, A1431314, A1863305, A1043166, A1042832, A1047611, A146351, A1045327, A146350, A1135012, A1492510, A1492519, A1119391, A1432643, Z99396, A1042802, A1432675, A1042741, A1119497, A128884, A1128900, A1431337, A1119363, A1042787, A1119355, A1432651, A1432647, A146349, A1042515, A1119522, A146341, A1119444, A1124134, A1119483, A1043295, A1043068, A1134132, A1119396, A1432674, A1134530, A1134519, A1119341, A1431330, A1134531, A1037208, A1119401, A1134527, A1134528, A1431308, A1043147, A1431243, A146346, A1119335, A1119464, A1043091, A1431248, A1432649, A1134533, A1432672, A1040207, A1042542, A1119496, A1042488, A1432665, A1134538, A146344, A146345, A1045328, A1043089, A1431241, A1284508, A1046356, A1043321, A1561182, A1042614, A1019249, A1066094, A1026436, Y17793, A1060234, A1133074, A1133053, A1133049, A1133076, A1054110, A11671, A1133068, A1122101, and A1069079.
HYABV14	6849	956236	1 - 574	15 - 588	AA282390, AA278249, AA488762, AA489734, AA482174, A17134842, A1762326, AA807226, AW082334, AA278706, AA724066, AA521424, AA909178, AA831579, A1131560, AA872215, AA993920, A1243205, A1524170, A14972085, and A1017999.
HYACG89	6850	724923	1 - 505	15 - 519	Z33538.
HYACT15	6851	674268	1 - 292	15 - 306	
HYACT18	6852	665720	1 - 568	15 - 582	N91098.
HYACT64	6853	929756	1 - 511	15 - 525	A1248214.
HYACT95	6854	746317	1 - 519	15 - 533	A1660312.
HYAC153	6855	727948	1 - 702	15 - 716	R00426, H69800, H69804, H61839, Z98884, and A1109628.
HYAC771	6856	760102	1 - 551	15 - 565	H06009, and R20240.
HYACE11	6857	966482	1 - 478	15 - 492	A1226164.
HYACD06	6858	974495	1 - 370	15 - 384	N27362, N23649, A1601503, A1425283, A1048969, A1355572, AA524604, A1595661, A1114869, A1310670, AA640305, A1037067, C15966, A1521525, A1732720, N08677, A1720287, A1272246, A1722815, A1086603, A1224583, C06151, AA535558, R22196, A1754064, AA559219.

AA324108, AA489390, AW419201, AJ926102, AA679794, AA669225, AI613459, AA730872, AA493464, AT702049, AA369494, AI349130, AA525423, AW021105, AI134338, AA514937, TA9381, AT791457, AT732501, AA831714, AA526415, AA862035, AA491827, AW729686, AI547110, AI061313, AA526542, AA664963, AI332435, N95424, AI275989, AA524207, AA565303, AW410844, AI523205, AA601376, R43468, R23873, AW904275, AA582080, AI076729, AA610381, N27377, H37968, AI121039, AI986101, AW087551, AA1199578, AI114494, AA847504, AW103990, AW275788, AI065031, AA708751, AW419209, AW302705, AA761606, AI751341, AC004134, AC004099, AF207550, Z97056, U91326, AC004686, AC005730, AI031587, AC005911, AC005089, AF038458, AI078393, AI121603, Z97054, Z83840, Z86661, AC005755, AC006965, AC005839, AC004929, AC005914, AC006001, AC005280, AI008582, AI096791, AI034555, AC005500, AC003006, AC005546, Z83844, AC004583, AC004755, AI049766, AC006536, AI035089, Z98051, AC006942, AC007731, AC005519, AC004890, AF042089, AC006251, AC003029, AI109984, AC005082, AC005399, AC005800, Z97183, Z95113, AC006094, AI035422, AC010077, AP000557, D88268, AI080243, AC005225, AC002470, AC005277, AI023575, AC007226, AC004542, AC005913, AC003671, AB023048, AI022316, Z98304, AC007686, AC005696, AC004893, AI031433, AC002375, AI133353, AI021578, AC007666, Z93930, AC004531, AC003982, D87675, AI031005, AI109758, AC000003, AI031670, AI050308, AF000031, AC005666, AC005726, AC006160, AI031659, AC007546, Z93241, AC007406, AC007688, AC007283, AI049795, AC005335, AC008372, AC005011, AC005531, AI031281, AC005971, AI024507, AC005484, AC004913, AC006088, Z85986, AI020997, AC004139, AI049777, AC002395, AC005921, AC005372, AC004865, AB001523, AI022302, AI009183, Y18000, AP000135, AC005632, AI049569, AI021391, AC005081, AI022476, AC009946, AP000505, AC007021, AC005086, Z15025, AI133448, AI022726, AC005944, AC004762, AC004150, AC009516, Z93244, AC005829, AC007030, AC005207, AC005288, AI021707, AF129756, AI022322, AC005257, AI010170, AI031255, AC006515, AC007371, AF134726, AC006241, AI121595, AI035460, AC005841, AC006162, AC004821, AC005972, AC006611, U72788, AI049539, AP00703, AC002314, AC008115, AC004983, AI109827, Z86090, AI035423, AC020663, AP000563, AJ011930, AC008273, AF047825, AC006064, AP000556, AC005015, AI139054, AC006480, AI031845, AJ003147, AC004685, AI096774, AC005932, AP000502, AI135744, AC006468, L78810, Y12855, AC007227, AC007151, AP000692, AI033527, AC004598, AI022723, AI109952, AP000555, AC004999, AC004895, AC003010, AC000052, AC006638, AC006511, U91322, M63543, AF165926, AC004587, AI031120, AC005041, AC012627, Z49236, AC004953, AC005377, Y14768, AB023485, AC006581, AI031680, AC005815, AP000140, AC006958, AI022356, AI049776, AI031282, AI031602, AP000354, AC005037, AF030876, AF111166, AC004263, AI023694, AC007676, AI034429, AC002045, D87008, AC003969, AP000226, AC000120, AC005940, AI021453, AI035086, U78027, Z73420, AC002425, AC004019, Z95115,		
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HYAAC03	6859	923525	1 - 709	15 - 723	AFI96969, AI109798, M89651, AI1031589, and AC004477.
HYAB04	6860	800006	1 - 449	15 - 463	AA179370, and AA464124.
HYAAV57	6861	734463	1 - 430	15 - 444	AA131782, AI279457, AI459300, AI887969, and AC010175.
HYAAV45	6862	717479	1 - 530	15 - 544	T66305, AA886512, F09927, AA749328, AA815166, AI475828, AA648819, AA651977, AA953511, and AA741442.
HYAAV65	6863	909956	1 - 581	15 - 595	W88974, and AC004582.
HYAAV55	6864	731420	1 - 398	15 - 412	T81523, T98761, AI080117, AB023176, and U14103.
HYAAV39	6865	929758	1 - 447	15 - 461	T98379.
HYAAN84	6866	782838	1 - 802	15 - 816	R02243, AI298594, H00843, AA400786, AW453087, W69160, AA485564, W75903, AI810717, AI806626, R69650, and R69664.
HYAAL49	6867	973089	1 - 479	15 - 493	AA646831, AA180467, AA505048, AA449184, and AC012083.
HYAAL41	6868	887395	1 - 622	15 - 636	AW32670, U46347, AB026436, AR066494, AR060234, AI81671, AR054110, and AR069079.
HYAAL19	6869	668338	1 - 922	15 - 936	AA082707, AA081874, AI201257, AA489677, H22947, AI268725, N63194, H11596, P04937, R39853, N63182, R05455, and AC005070.
HYAAK77	6870	887044	1 - 765	15 - 779	R84433, H83979, and AA017024.
HYAAK74	6871	765252	1 - 510	15 - 524	R93968, W93000, and AL109613.
HYAAI03	6872	923526	1 - 434	15 - 448	AI092745.
HYAAV78	6873	773433	1 - 467	15 - 481	H01888, R93377, AI110203, Z83843, and AC004386.
HYAAD24	6874	677019	1 - 550	15 - 564	H63893.
HYAAC24	6875	677010	1 - 675	15 - 689	AA075368, AA075369, AA559324, AA804735, AI336026, AI114694, AI732377, AC007406, Z69364, D87009, AC004815, AI031257, AC007263, and Z83844.
HYAAB40	6876	841969	1 - 631	15 - 645	AA497098, and AC006023.
HWWEV1	6877	965434	1 - 648	15 - 662	W38418, W38417, AW362770, AI368729, AI523296, AA548224, AA866898, AI65483, W73847, AA538195, AA700476, AI828445, AW305153, AA548241, AA707354, W69719, W73703, AA164647, AI539088, Z19840, AI752812, AI752779, AW262145, W38359, AI399680, AA164646, R71097, AI073454, AI871525, F09131, AI686475, AA917430, AA372471, AI811402, R71445, AA418958, AI695645, AI242956, AA385654, AI304631, AI597928, AW362391, and A75407.
HWWEV11	6878	965426	1 - 423	15 - 437	AA553392, AA526829, AI023375, AC008372, AC005839, AF111168, AC005288, AC007371, AC004520, AC000353, AI031733, AI022163, AI022320, AC005756, AC004983, AC004707, AI121652, AC002300, AI109984, AC006381, AC004966, A003147, AC005570, and AC003276.
HWWEV06	6879	933690	1 - 415	15 - 429	AW452648, AI249134, AA831307, AA504653, AW182255, AI668242, AW444889, H14382, T33198, AA731107, F37077, R99416, W46344, W05246, AI632386, AI521519, AW150858, and AF151907.
HWBGG32	6880	779081	1 - 665	15 - 679	N23897, and H84937.

HWBGFD4	6881	927284	1 - 477	15 - 491	AI338804, and AI120936
HWBY46	6882	800638	1 - 1783	15 - 1797	AI791349, Y17793, and AF064854
HWBEG18	6883	909798	1 - 940	15 - 954	AA906863, AW408789, AW452373, AA352977, AA732349, AI269653, AI492098, and AB020653
HWBEG69	6884	754328	1 - 506	15 - 520	T85049
HWBEG25	6885	677660	1 - 520	15 - 534	H46563
HWBEA06	6886	948320	1 - 361	15 - 375	AA641774
HWBDU71	6887	835888	1 - 521	15 - 535	AA502126, AI109939, AC004859, AC008078, AC005951, and AF002223
HWBDU58	6888	735774	1 - 930	15 - 944	H20642, AW294637, R06621, R23933, and Z74739
HWBDS59	6889	743462	1 - 768	15 - 782	W94699, W88779, W88744, W88864, AI081615, AI903841, AA176310, H81217, AW090258, N73198, N58667, N48499, AA359586, W25203, R81022, AA345015, AI040407, AA113397, AA215919, AI807163, R95799, H37844, R87151, AA630583, T71499, N77311, W88840, H66405, AA309734, AA026675, AA385486, R87079, AA315010, W37275, R01782, Z71183, AI050254, A85213, and AF129537
HWBDS12	6890	971872	1 - 430	15 - 444	AI189929, AI300839, AI829939, AW452299, AI188478, AA651825, N40191, W37646, AI002523, AI672667, AI344390, AA948467, W37382, AA831436, R11180, AW191839, AA287646, AA845191, AA835036, AW196619, R95793, AA302473, AA480612, AA704742, R11179, and AF201951
HWBDR82	6891	779002	1 - 469	15 - 483	AA905379, T91923, and AC000386
HWBDQ58	6892	735769	1 - 731	15 - 745	T81870, and NS2370
HWBDL82	6893	728805	1 - 647	15 - 661	AW247455, H10647, T80026, AA322636, AA663768, H39049, R15783, AA203493, W78783, AF070594, AF033827, and AF022729
HWBDK08	6894	958956	1 - 370	15 - 384	AI917114, AI873737, AA664124, AI039309, AW161459, AW161879, AI191343, AI003797, AA936548, H24953, AA715508, AA504951, AA524846, AW243945, AA728861, AA664248, AW275432, AA525041, AA715531, AI043745, AI805261, AI246061, AW069227, AI246192, AI80889, AI865980, AI134216, AI634187, AI457313, AI138299, R95030, AI031281, AC002395, AC007656, AC005519, AF139813, U85195, AC005274, AI031767, Z97074, AB000658, AC004228, AC007564, AI121603, AP000692, AC003041, AP000500, AP000503, AI031311, AI031680, AC005562, AF111168, AI079342, AC007938, AF111169, AC005529, AC006449, AI078615, AI049699, AC006115, AC007684, AI035460, AC005291, AI132712, AC005037, AC002312, AC004859, AC006254, AC007216, AC005772, AI109865, AC006121, AF111167, AC005969, U91318, AC006317, AI031282, AF134726, AC006480, AC004526, AC007376, U91327, AI031848, AI01930, AC005520, AI109798, Z84469, AC004230, AF060568, AI122020, AC000193, AI109827, AC005899, Y10196, AI035427, AP000117, Z95152, AP000502, AC002120, AC004884, AI031667, AI049843, AC005730, AI021397, AI022238, AI132771, AI049830, AC005632, AC005180, AC002978, AC005839, AC007384,

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AA213930	15 - 519	15 - 519			
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AA197234, AL119641, AJ132948, AB029036, AF119043, and AL035410.	15 - 370	15 - 370			
AA279024, R10600, and AC006323.	15 - 638	15 - 638			
T78846, and AF007131.	15 - 564	15 - 564			
TI2632.	15 - 505	15 - 505			
AL096791.	15 - 464	15 - 464			
N52962, T87837, and AL021938.	15 - 401	15 - 401			
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N44984.	15 - 398	15 - 398			
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HWBQB22	6906	861613	1 - 700	15 - 714

HWBDBN86	6907	785313	1 - 535	15 - 549	R07917, R07918, H57950, and AC003999.
HWBDBM02	6908	919423	1 - 508	15 - 522	AA387133.
HWBDBL57	6909	868349	1 - 416	15 - 430	AA359030, R16068, and T72674.
HWBDBL03	6910	925691	1 - 455	15 - 469	AA565820, and AA420538.
HWBDBF60	6911	740125	1 - 351	15 - 365	R38327, and AH70403.
HWBDBE52	6912	868358	1 - 449	15 - 463	AW183158, AW143674, AW170591, AD244986, AB36219, AB265158, AW135808, AA612970, NS2534, T72657, AA932859, AA861691, AB68903, AW024446, AB760918, and AB783670.
HWBDBD23	6913	675360	1 - 497	15 - 511	W56858, AB023145, and AB028449.
HWBDBAX77	6914	771958	1 - 526	15 - 540	H00548, and Z69648.
HWBDBAT83	6915	780976	1 - 412	15 - 426	M78523, H84125, AA013441, AA017681, H86611, AA651763, and AA873021.
HWBDBAS96	6916	796126	1 - 491	15 - 505	R06345.
HWBDBAR29	6917	690422	1 - 621	15 - 635	N36225.
HWBDBAQ71	6918	944080	1 - 458	15 - 472	AA078851, and AW237409.
HWBDBAQ02	6919	919351	1 - 519	15 - 533	A1221469, and AA883558.
HWBDBAO50	6920	724135	1 - 390	15 - 404	AA215799, AA523695, AD06717, R90976, AB915081, H29914, AA484892, AL045476, AB09174, AA382746, AB370170, AW272640, AW392414, AB130709, AB536858, AB579995, AA573000, AB131261, AA435361, AA458573, AB14682, AB291439, AW079737, AA984920, H80935, N69548, AA669441, AW265155, R87135, AB1471455, AW190277, AW148775, AL046193, AL044340, AB687343, AA297776, AW302670, AW419389, AA429481, AB873627, AA078137, AB17586, R94436, AA298771, AB76049, AA657910, AW089016, AW084173, AL037927, AA662989, AA405798, T40629, AA568314, AB376454, AA515723, AA654482, AA837771, AL031428, AC006312, AP000501, AC006480, AC007225, Z93241, Z98946, AF064859, Z95115, AC005049, AF109907, AC005058, AC002477, AC004820, AF196969, AL121757, AC006101, AC004963, AL035422, AC005006, AL049712, AD000092, AL121603, AC004941, L78833, AC005924, AP001050, AL035086, AC007040, AC004025, AC004231, AP00312, AC005274, AL031668, AC000075, AC004491, AC004796, AL0498335, AF006487, AF027974, AC004967, AC007878, AL031664, AL035071, AC002369, AC005824, AC005736, AP00356, AL049759, AC004656, AC004878, AP000503, AF165926, AC002544, AC006947, Z85987, AC004653, AC005696, AL139054, AL021394, AC003684, Z97630, Z85986, AF030453, AC005041, AC004883, AC006536, AC001228, AC005237, AF134726, AL109854, AL022322, AC005190, AL034423, AC003101, AC004526, AF129756, AL109984, AP000193, AP000045, AP000113, AC005800, AL022311, AF045555, AP000505, AC005509, AP000504, AL109623, AC005772, AC007559, AC005088, AC007546, AC004815, AP000117, AC004079, AC002312, AC005666, AC000059, AP000299, Z98272, AC005202, AP001052, AL1008730, AF027590, AL049692, AC006657, AC005231, AC004217, AF001053, AC005081, AC005899, Z93331, AF038458, AC002126, AL034351, AC006270, L48038, AC005189, AC003004, AC003034, Z933575.

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HWBA038 HWBAK65	6921 6922	709490 747731	1 - 486 1 - 503	15 - 500 15 - 517	AL359877, H09144, R44298, R51016, R50773, AL074576, AA035771, AL934373, T52471, H10009, R31770, AA397967, F04627, AL047188, AL042009, AL039390, AL046681, AL046137, AL049726, AA598862, AL249936, AL672187, AL042551, AL446483, AL045503, AW337394, and AC007688.
HWBA113	6923	975117	1 - 1792	15 - 1806	AL431351, AL119324, AL432644, AL623302, AL431354, AL431323, AL431353, AL431347, AL432653, AL431230, AL431328, AL432654, AL432655, AL431310, AL431312, AL492519, AW081103, AL432677, AL431337, AW128900, AL432661, AL432674, AL432675, AL432672, AL119319, AL432651, AL432647, AL431241, AL431330, AL431243, AL431357, AL119457, AL432650, AL431248, AL431255, AL431345, AL432649, AL432665, AL431307, AL431346, AL431316, AL432662, AL432676, AL432673, AL432658, AL432664, AL431340, AL791349, AW128846, AW392670, AL042544, AL431238, AL119399, AW372827, AL431308, AL119443, AL432657, AL119341, AW128897, Z99396, AL431247, AL431751, AL119355, AL432643, AL119363, AL119441, AL492510, U46349, AL037205, AW384394, AW363220, AL432645, AL431321, AL119497, AL431257, U46331, AL119484, AL119391, U46350, U46347, U46341, AL119483, AW128884, AL431330, AL492520, AL142131, AL431318, AL134920, AL042433, AL119439, AL119522, AL119396, U46346, AL431235, AL119335, AL042984, AL431321, AL431315, AL492509, AL134902, AL119401, AL134536, AL119464, AL134525, AL431246, U46345, AL119418, AL119496, AL134538, AL042614, AW129223, AL042450, AL043019, AL042542, AL042965, AL042975, AL043029, AL042551, AL047729, AL043003, AL119304, Y11793, AR066494, AB026436, AF019249, AF064854, AR060234, AR054110, A81671, and AR069079.
HWBA172	6924	766073	1 - 457	15 - 471	R53373, and R19776.



HWBAH16	6925	661664	1 - 591	15 - 603	N76551, AL051605, and AW450879.
HWBAF43	6926	715111	1 - 587	15 - 601	H69407
HWBAF09	6927	625401	1 - 265	15 - 279	AA259938
HWBAC02	6928	919539	1 - 438	15 - 452	AL129592, AW377636, and AW390415.
HWAGV04	6929	926759	1 - 482	15 - 486	AA169835, and AC000469.
HWAGQ02	6930	953013	1 - 675	15 - 689	AL829939, AA651825, AL188478, AL672667, AL344390, AA845191, AA835036, AA831436, AA948467, AA704742, AL002523, AW191839, AA287646, TG2849, RS9763, T90287, AW191840, R11180, AL189929, AA988042, AA998818, R49937, AL300829, AW196619, AA866287, AA938191, W37646, AW089814, N42191, R95749, N74604, AW452299, AA502473, AA480612, R11179, AA703157, AW341475, and AF201951.
HWAGO42	6931	958373	1 - 561	15 - 575	AL738975, AL036481, AA232116, AL337371, AW138609, AL654432, H24091, and AC0077250.
HWAFQ10	6932	961339	1 - 1031	15 - 1045	AA417827, and AA2356655.
HWAFM60	6933	868436	1 - 608	15 - 622	AA238987, AL020997, and AC007193.
HWAFG12	6934	969605	1 - 403	15 - 417	AL831120, and AW152248.
HWAFE87	6935	949950	1 - 437	15 - 451	AA460146, and AL962568.
HWAFD56	6936	868452	1 - 407	15 - 421	AA453777
HWAFD10	6937	963323	1 - 402	15 - 416	AC002310, AC002119, AC005839, AL049569, AL035683, AL031594, and AC007382.
HWAF447	6938	948858	1 - 346	15 - 360	AL091703, AL650617, AL051377, AW206131, AA284515, AA287237, AL797889, AL245567, AA576442, AL660645, AL091867, AA251505, AL141021, and AL536674.
HWAF405	6939	930990	1 - 786	15 - 800	AL368732, AL244157, AA297866, T57767, AA757426, AL814820, AL624528, AA664126, AL241705, AA130820, AC004985, D57675, AP000501, AL022220, AC005839, Z99716, 281364, AF196969, AC005924, AL031291, U47924, AC005527, AL034549, AL023553, AF196779, AC005088, AC005779, AL050318, AC002310, AF031076, Z97054, AC005004, AF111168, AC004477, U95740, AC004796, AL033527, AC000353, AC005921, AC005529, AC002115, AC010168, AF003626, U63721, AC009247, AL035086, AC006512, AP000557, U80017, AC005013, AC007308, AC005519, AP000692, AF031078, AC005295, AC007263, AC005358, U62292, AC002470, AF030876, AC004086, AC005940, AC005702, AC004883, AC007055, AL096791, AL135744, L78833, AP000088, AC005280, AC002425, AC002300, AL121658, Z95114, AL022326, AC005017, AC007546, AL031276, AC007684, AC002565, AC006511, AC005874, AF134471, AC007227, AL031662, AP000555, AL109952, AC004024, AL034429, AC005632, AF109907, AL034420, AC002316, AC004859, AL050332, AC004655, AC005412, AL031255, AP000330, AC016830, AC005740, AC005321, AL031295, AC004841, AL080423, Z86090, AC005520, AC006480, AL049869, AC005971, AC005102, AC006441, AL035659, AC005666, AC004895, AC012384, AC004659, AC002504, AB023050, AC004765, AC002350, Z94802, AF001548, AP000067, AC005387, AC005911, AL035420, AC008044, AL049569,
HWAEZ81	6940	868460	1 - 505	15 - 519	

					AC005484, AL079342, AC005089, AC007225, AC004000, AC004922, AC001228, Z93115, AC004084, AF207530, AC002404, AF196972, AL021578, AC004491, AL049757, AC006468, AL022721, AL035400, AL031680, AL031311, AC005763, U95742, AL049759, AL020993, AC004650, AC005829, Z94056, AC004983, U91321, AC006115, AP000115, AC005049, AF030453, AP000355, AC009509, AC006211, AC011311, AC007688, Z98044, AC004890, AL022323, AC003962, AC004967, Z84469, AL109798, AC007666, AP000135, AC005071, and AL022238.
HWAEZ19	6941	874351	1 - 505	15 - 519	AA693960, AA773315, AA701937, AL640497, and AA679299.
HWAEU35	6942	887166	1 - 460	15 - 474	
HWAEH10	6943	838763	1 - 402	15 - 416	AA747537.
HWAEH25	6944	951965	1 - 876	15 - 890	AA258884, AL133088, and AA134634.
HWAEK27	6945	868494	1 - 566	15 - 580	AA663139.
HWAEK71	6946	931547	1 - 560	15 - 574	N43812, N28593, N42447, N25847, N42638, AA164284, and M94043.
HWAEK08	6947	958115	1 - 703	15 - 717	AL640322, H11674, AA481880, AL687453, T08591, AW408528, and AB018339.
HWADQ35	6948	868526	1 - 850	15 - 864	AW242308, AT175675, AA464440, AA639514, AA429990, D20149, AA446133, AW269686, AA446252, AA490572, and AL914301.
HWADQ27	6949	682458	1 - 549	15 - 563	T83909, and R68586.
HWADN42	6950	713272	1 - 379	15 - 393	AD94550, and N79076.
HWADM84	6951	782685	1 - 730	15 - 744	H05351, AA826458, and AL137351.
HWAD146	6952	891149	1 - 252	15 - 266	R88163.
HWAD25	6953	677594	1 - 413	15 - 427	T70432, T83092, and W28247.
HWADD18	6954	665173	1 - 446	15 - 460	AL039706, AL744599, H19229, AL202556, AL954761, AL052551, AL1992311, AL039705, R02726, Z40315, AL872336, W44986, AL521131, AW248932, AL032378, AL978572, AL950218, AL203399, AA88242, AL203400, and AK022159.
HWACZ56	6955	733002	1 - 312	15 - 326	AA056722.
HWACY70	6956	756888	1 - 540	15 - 554	AA127538, AA007643, AL702678, AA263149, AA285232, AL904448, and AW390105.
HWACS69	6957	774914	1 - 601	15 - 615	AA130132, AA826414, AW262702, AW069242, AA165524, AL922531, W81127, AL0395845, AL424003, AL299901, AL557105, AL872483, AA088173, AA136051, AL216212, AA776540, AL383347, D20019, AL051093, AA405559, AA258314, H60707, AL168098, T65372, AL246309, H17966, AL572143, AL130119, H22958, Z39390, AW269492, F09402, RA0023, F04748, F03710, AL619876, N90250, F02805, W94821, N66673, AA088630, AL419665, W31598, AL217531, R20768, R50838, AL578963, and AL890699.
HWACQ54	6958	729166	1 - 195	15 - 209	AA054175, AA018743, and AA015643.
HWACJ56	6959	733013	1 - 406	15 - 420	T81159.
HWAC146	6960	718711	1 - 526	15 - 540	T53843, and N77512.
HWACH03	6961	923374	1 - 415	15 - 429	AL051545, and T95620.

HWACD30	6962	691565	1 - 383	15 - 397	AI143085, W63738, and W61076.
HWABY68	6963	927387	1 - 416	15 - 430	AA242852, AI129391, AA743400, AI934605, AA252186, AA531278, AA705950, AA418351, AA834128, AA530987, AA252187, AA294796, AI377360, AI684366, RS4388, H07875, AI289290, and AC006942.
HWABY67	6964	751409	1 - 504	15 - 518	N57896, and AC005232.
HWABY34	6965	868535	1 - 380	15 - 394	AI190781, AC005920, AC004531, AC006141, AI021391, AC004883, and Z93930.
HWABY20	6966	669486	1 - 370	15 - 384	T87470, and T85392.
HWABY19	6967	951277	1 - 433	15 - 447	AA535015, AA361063, and H83494.
HWABP02	6968	919442	1 - 448	15 - 462	AA766487, AA504639, and H83494.
HWABH13	6969	656767	1 - 678	15 - 692	AA258954, AA258920, AI251082, AA715090, AI674840, AH70431, AI223604, AW360896, AW021735, H12071, H84675, AI754271, AI755164, AI41434, AA283005, AH70437, AI104793, AA077786, AI109375, AA581903, AA420998, AA572874, AA421078, AW275425, FI2561, AA468022, AI274252, AA570584, AI042853, AI889566, AA877932, H09744, AI298061, AI281909, AW008450, R61498, AA876445, AW160038, AA665021, AA579367, AI537041, AA001904, AI017251, AA169129, AA476397, AI603194, AT766906, AI864332, AW021583, AI191659, AA630451, AI048534, AA535624, AA918938, AW192065, AI382289, AC006441, M74492, AC007993, AF035645, AC004884, AI034375, AC005562, AP000349, AC002430, AC004477, AI049759, AC000039, AC005778, AF031078, AC007384, AC005015, AC006023, AC004890, AF030876, AI121653, AI121658, AI031311, AC005034, Z98044, AC003109, Z98744, AC005952, AC005678, AC005102, AC002996, AP00320, AC004881, AC009516, AC007263, AP000556, AC005800, AI034551, AC005993, AF030154, AF106656, AC007676, AF037338, AP000351, AI049776, AC006511, AC005912, AI17338, AP000555, AC004778, AC006101, AC002558, Z83841, AC005701, AC005933, AI022165, AI132774, AI080243, AC004815, AI035659, AC006953, AP000557, AI17258, AC004327, AC007565, AC004475, AC012083, AI096701, AC004662, Z97054, AC004167, AP000135, AC002404, AC018633, AI021153, AP000031, AC004656, AC006241, AC005829, AC004061, Y88268, AC005786, AI109627, AI031846, AI022323, AI133297, AI133245, AC006548, Y88268, U91322, AP000553, AC004851, AI229042, AC006582, AC003999, AC004596, AC003036, AF196779, AC006487, U73636, AI035423, U52112, AB014077, AC005081, AF053356, AC007707, AI049757, AC004099, AI031281, AF064863, AC004841, AP000697, AC005759, AI2035458, Z95125, AI035684, AC005412, AC005871, AI031428, AP000694, AC005759, I240288, AI049766, AC007227, AP000345, AC005568, Z95152, AC004209, AC000379, AC008134, AC006581, I78833, AI031984, AC004667, AC006039, and AC004134.
HWABH68	6970	929275	1 - 200	15 - 214	AA708891, T84753, AA826842, AA906049, H62449, AA192606, AI697110, AI476751, H62426, AI270685, AA588738, AF770029, AI803894, AI848631, AI859177, AI696295, AI559322, AA622890, C75503, AI833046, AW014772, AI678463, Y98662, AW243066, AA677245, AA369307, AI282884, AA414646, C75627, AI698074, AW303681, AI310008, AA508708, and

HWABG11	6971	949088	1 - 710	15 - 724	A66648, AW028517, AH92449, AW172063, NT1710, AA312583, AI243139, AA259158, H08035, and AA214724.
HWABD52	6972	726510	1 - 398	15 - 412	AA195243, AA416793, AA44146, AA195430, AL040098, and AA443964.
HWAAV79	6973	791452	1 - 462	15 - 476	NG4316, R63482, and AA418089.
HWAAV51	6974	973237	1 - 350	15 - 364	H08515, AW451243, AI342965, AI916317, and AW173677.
HWAAV48	6975	721442	1 - 319	15 - 533	RA937, AA099818, AW04742, AA831436, AA845191, AA287646, AA651823, AI188478, AW191839, W37382, AI344390, R11180, AA948467, AI672667, R95793, T90287, AI829939, AI002523, T62849, and AF201951.
HWAAW6 5	6976	779578	1 - 858	15 - 872	AA934867, AA960929, AA993756, AW023082, AW059828, AW161156, AI345335, AA715307, AI269862, AI364788, AI627988, AI036673, AI079963, AI225339, AI345005, AI698401, AI366900, AI860003, AI872423, AW268302, AW274192, AW072719, AW087445, AI783504, AI820284, AW162194, AL045500, AI866770, AI886753, AI824576, AI344893, AI806613, AI874166, AI670009, AI809974, AI890307, AI554245, AW071417, AI889189, AI890907, AI538850, AI623941, AW117882, AI624543, AW198075, AI345463, AI539153, AW302992, AI923989, AI433976, AI863382, AI917963, AI859991, AI434741, AI047675, AI349957, AI433157, AI548821, AI274507, AW151136, AI310575, AW130930, AI539771, AI371228, AI537677, AI340533, AI494201, AW160905, AW172723, AI500659, AI343091, AI815232, AI251221, AI801325, AI121270, AI500523, AI037454, AI042440, AI582932, AI284517, AI500706, AI445237, AI491776, AW151138, AI047422, AI521560, AI500662, AI926878, AI637748, AI520809, AI284509, AI284131, AW301513, AI889168, AI064830, AI866573, AI037649, AI633493, AI434256, AI866469, AI110402, AI805769, AI888661, AI284513, AI888118, AW083778, AI119863, AI250369, AI436429, AI889147, AW238688, AI440252, AI624154, AI699863, AI610557, AI686906, AI433037, AI828383, AA761557, AI783997, AI887499, AI923509, AI039086, AI863321, AW022699, AI340603, AI619502, AI677796, AI632408, AI886181, AI802542, AI352497, AW080700, AW168373, AW198144, AI620089, AA449768, AI288305, AI886123, AW118518, AI352326, AI348854, AI499285, AI570807, AW168485, AI933589, AW026882, AI635067, AI042628, AI923370, AW149925, AI57261, Z99428, AW163834, AI251485, AI445992, AI445990, AI119791, AI345745, AI020723, AI690748, AI340311, AI866465, AW191003, AI334445, AI040243, N33175, AI349645, AI036980, AI500061, AI039276, AW051088, AI349598, AI620075, R32821, AA641818, AI440263, AI633125, AI043981, AW269097, AW161579, AI038445, AW082113, AI698391, AW170635, AI917252, AI915291, AW152182, AI890628, AW083804, AI571867, AW302973, AW280660, AI473536, AI500588, AI045163, AI610667, AI345347, AI042745, AI445804, AI468872, AI973132, AI540754, AI866786, AI886192, AI036631, W74529, AI923046.
HWAAQ76	6977	887772	1 - 987	15 - 1001	

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HWAAAE0	6978	691878	1 - 465	15 - 479	AA034268.
HWAAAL70	6979	757035	1 - 698	15 - 712	AA651842, AI830925, AW270749, AI356943, H41232, AW236741, AI118384, and AA724467.
HWAAAI41	6980	712141	1 - 370	15 - 384	H71498, AA381460, AI873759, AA547947, AW179306, AA630672, AA610219, and AI138329.

AWA60	6981	751037	1 - 561	15 - 575	<p>           A1240683, A1039584, AW179305, AAJ78155, AA6400710, A1470646, AAJ78297, A1454574, A921649, N31072, A1376100, AW236239, A1453383, AW074039, A1956124, A1556904, A922654, AA564284, F15832, F16183, AA534010, AA535406, AA747777, R57956, AA04961, AA384725, AA837087, H81346, AW702614, A1858864, N35000, AA613630, A1888759, A1917132, A1110688, F00212, AA776936, AA776921, A1908575, A1285696, A1135357, C16675, A1278972, AA324242, AA749235, AA613232, AA507612, A1982884, AA077401, AA832145, A1708009, F30158, AA436774, A1017251, A1923333, AW193760, A1382017, AA436782, A8001356, A1134519, AA455252, AA365141, AA745189, A1978493, A1708139, A6078616, AW081296, AF067844, AC004990, AC005193, AC005250, AC005191, AC007285, A1034451, A1031391, AC016027, Z91783, AC002350, AP000351, A1121653, A1109627, AC005274, U95740, AC007690, AC005102, L78810, AC005318, AC016830, AC006515, AC003030, AC004491, AC004682, A1005583, AC020663, A1049712, AC005900, AC004483, AC004526, AC007462, AC004773, AC005060, AC004834, A1139054, U91322, AC007221, AC002400, A1133245, A1031311, AC005694, AC004755, AC002288, AB023048, AC006063, AC005011, A1035079, A1049697, A1031577, AC005221, AC008040, AC007546, AC005243, AC004386, A1916971, AC007225, AC004883, AC005618, A1121823, A1111168, AC005837, A1121757, A1035072, AC004167, AF064866, AC004087, AC005529, A1121578, AC003982, AC005180, AP000961, Z86090, AP000045, AP000113, A1079340, U53331, AC007227, AC002404, AC005620, AC007514, A1035443, AC005690, AB000638, AC002352, A1049759, AC005089, AC005829, AC003667, A1035695, A1031121, AC005366, AC003006, AC004675, AP000299, A1031388, A1034424, A1035420, AC004821, A1049757, AC006960, AC005702, AC004941, AC006597, AC005940, A1050312, AC006013, AF088219, AC007051, AP000104, Z84476, A1096776, AC005071, AC003684, AC004972, A1034449, AC007919, U82828, AC006237, U89335, AC004864, A1121603, A1031228, AC011718, AC002310, AC006511, AC004470, AC006043, AC004929, AC007664, U85195, AC004963, AC000159, AC006530, A1021453, Z97195, A1031283, AC003950, Z84469, AC004259, AC004638, AC005210, AC004000, A1109977, AC004600, U521112, AC007064, AC007637, AC000085, AC005328, AC002543, AC004448, AC007536, A1034379, AC003664, AC005081, AC004643, A1031427, A1031296, A1050402, Z83840, AC006312, A1109985, AC005881, AP000493, AC002091, AC002730, AC004477, AB023051, A1096773, Z95114, Z99127, AC003013, A1049713, AC002349, AF226866, AC003399, AC008004, AC002565, AC002312, AC002476, AC006077, A1022163, A1049766, AC007371, A1133396, AC002559, AP000152, AC004130, A1049849, A1133485, AC007279, AF023268, A1130343, AF002597, A1035423, AC006487, U47924, A1122003, A1021154, AC006537, AC004945, Z98742, A1031053, Z94056, A1031687, AC006509, AC004865, AC007056, A1098277, and AC007738.         </p>
AWA60	6981	751037	1 - 561	15 - 575	<p>           AA463392, AW163477, AA533225, W69511, AA190334, AA227416, R15328, AW246998, T27537, AW161408, AW163687, A1751466, AA325962, A1872642, AA210947, H23526,         </p>

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HWAAE31	6982	841973	1 - 352	15 - 366	AA251131, and AA775171.
HWAA806	6983	935131	1 - 465	15 - 479	H54960, and AI739325.
HUADR34	6984	944903	1 - 646	15 - 660	N62033, N28254, H55465, Z83844, and X87671.
HUUCS12	6985	969325	1 - 675	15 - 689	T99881, T81169, and T99780.
HUUCJ02	6986	940813	1 - 776	15 - 790	AI033712, AI954084, AW167226, AI983520, AL041005, AI984573, AI432645, AA131336, AI564483, AA191629, AI907763, AW370258, AI679914, AA313042, AI679407, AI174699, AI890600, AW379481, AI623994, AI924918, W81030, AI683963, AA406281, AI056626, AA524116, AI807732, AA992422, AA308853, AI610539, AA653510, AI804538, AA653438, AI986456, AI500648, AW189915, AA708759, AI679802, AA176706, H81609, AA740782, R72705, AI25930, AA555116, AW173659, AA432282, AW363351, AI103616, AA176724, F73714, AA682225, AI208567, AA826560, AA308851, AA134257, AA770415, AI249886, AA346286, AI023040, AA428627, AW407257, R49324, AI022174, AA226672, AA386226, AA954017, AW316887, AA548185, AA4173054, AI378920, AA467744, C14715, AA324842, W46618, AW291663, H22297, AI952445, AA308852, Z38953, F27547, AI624769, AI688767, AI254198, H29271, T30886, AI984007, H38044, AA102260, H19121, AI1747099, T64974, AI190377, U55980, AA313043, AA652594, T33556, AA588454, AA079766, T30885, AI289751, AA079662, AW386889, AA609230, N67209, AW130206, W81067, AA44161, AA053081, AI690803, AI080131, AA573007, F10793, T32048, AW275180, D54061, AA464161, AA026011, H60333, T39333, AA745903, T19224, AI908040, AW294394, AW367021, M78639, AI355669, AW298166, AW361250, R84893, AI908037, T25950, T81632, T19550, R98063, D54002, AI908008, AI690848, H81610, H66200, AA403067, T25950, T81632, T19550, R98063, D54002, AI925734, AI906757, R93365, AI250621, Z30252, AI909826, AI909824, AW369644, T04849, H22261, AW376366, R32768, AI908081, AA429079, AW403033, AA160093, R90873, AA128736, AL041263, D58524, AW389303, AL043881, AL046604, C04059, AA531508, AA128960, AL046006, T19252, AI907876, AW392242, AL042624, AW403808, AL045474, AL041886, H01570, AI363803, R78804, AL041872, T31059, H19603, AA228109, H24164, H12675, C15988, AI940088, AW381410, H44250, N48104, AA393629, AW367781, R28128, R23869, T58288, R72979, AA984062, AW374404, AW374385, AA242748, N44862, R88953, AI557267, H90121, AA323985, T64231, R90783, AA319598, H02821, AA410901, AL042059, C15711, R73195, R76234, AI829391, R98306, AW389265, AA305347, AW376369, AA295312, AI907782, AA333617, W27031, H02380, AA320201, AI909838, AI909848,

HUJDN03	6987	922441	1 - 658		AI909882, AI909866, AI909883, AF132984, AC002039, AC002045, AF001549, AC007216, U95742, D86974, AC002544, U91326, AF072097, and AB032254.
HUJDE05	6988	967231	1 - 555	15 - 672	AA569288, and AA569185.
				15 - 569	AA393987, AW249982, AI377213, AI440471, AA668868, AI423208, AA922498, NA9855, AA746880, AA232187, AA741266, AA830850, AA523735, AI023220, AA551426, AA130096, AD776697, AI670085, AI199436, AI889460, AI141114, AA806441, AI215922, AI028484, AI281030, AI735186, AI224934, AA809356, AI261472, AA809458, AA588859, AI524208, AA398075, F26431, AA826865, AI721076, H69575, H95065, AA9988255, AI984011, AA368844, AI378424, AI936240, AI186572, AI963211, AA809442, W52780, AA744793, AA827659, H41598, AI493433, AI266572, N36218, AA130095, H62017, AA303699, AA261941, AA835915, F28374, AC002990, F26160, AI371682, AA872843, H62016, H84745, AA877236, N54430, AA574343, W52484, AA513394, AA559062, AI202007, N80053, AA010201, AA235462, AA292526, AI222768, AW746245, AI133447, H84833, H69596, and AB005815.
HUJCN12	6989	969331	1 - 545	15 - 559	CI8813.
HUJQ04	6990	926196	1 - 318	15 - 332	AW392670, AI119355, AI042984, U66349, AI119341, AI119319, AI119457, AI119324, AW372827, AI119483, AI119443, Z99396, AW384394, U46351, AW363220, AI119497, AI119484, AI119503, AI119391, U46350, U46347, U46341, AI119444, AI119456, AI037205, AI134538, AI042433, AI119439, AI119522, AI119396, U46346, AI119335, AI119402, AI119401, AI142131, AI043019, AI134527, U46345, AI134920, AI119418, AI119399, AI119496, AI134525, AI043033, AI042614, AI043029, AI043011, AI042544, AI042450, AI119464, AI042542, AI042965, AI042975, AI042551, AI043003, AI034429, AB026436, AR060234, AR054110, AR066494, A81671, and AR069079.
HUJBP01	6991	914512	1 - 459	15 - 473	Z66011, Z66010, Z55354, and Z55353.
HTYSK04	6992	501001	1 - 449	15 - 463	
HTYSK65	6993	500999	1 - 338	15 - 352	
HTYSK23	6994	575458	1 - 338	15 - 352	
					AI866971, AA420546, AA644090, AI087040, AW304580, AA825827, AA584527, T63954, AI270177, AA487226, H86725, AW022934, AI192440, AI669421, AA847499, AI124798, AA225890, AA836552, AI008718, AC005932, AI022336, AF207550, AI035587, L78833, AC004883, AC002565, AC005512, AC002115, AC005102, AC005829, AI021391, AP000103, Z93930, AC004491, AC007055, AI035462, AC005519, AC006137, U95742, AC004817, U91326, AC006509, AC004659, AI049776, AI008734, AP000088, AI035423, AC007216, AC005914, AC002544, AI031983, Z84469, AC004859, AC003041, AC002126, AP000032, AC006552, AC000025, AI031602, AF134726, AC005527, AI109839, AC007311, AC008101, AC005500, AI035584, AI133448, AC004895, AI049872, AC004526, AI031295, Z98884, AC005071, AC006262, AF000045, AC005844, AF053356, AC004531, AI0080317, AC002073, Z94056, AI049869, AC007387, AC005484, AI035420, AC003101, AI003701, AI135744, U91318, AI049766, AC007298, AC004815, AC016027, AC004967, AP000501,



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HTYND11	6995	965061	1 - 354	15 - 368	H63287, H83779, AA479904, AL301403, H72739, H03721, W58699, W80428, W69319, N75444, N75831, AA931805, AA976567, R69416, H20193, H27894, AA524259, AA776787, AL093933, N89605, AA976789, AA417821, A077948, AA566884, W58105, AL184042, AA471035, AA159198, AL184456, A0000778, AL298398, AL207043, AL298093, AA976989, AL160353, AL198251, AL268758, AL352347, AL281960, AL268851, AL858974, AL125797, AL042070, AL272028, AL336185, AL125808, AL394538, AL140335, AL191334, AL356687, AA931904, AL279283, AL768190, AL279507, AL086220, AL191106, AL184383, and AA057072.
HTYNC04	6996	926906	1 - 379	15 - 393	AL009081, AA724726, and C01435.
HTYAA83	6997	537277	1 - 411	15 - 425	AA303105, AA364859, AA989182, AL181345, AA326370, AL523074, AL09307, AA634252, AA828053, AC006211, AF196969, AC004491, AC005037, AL109627, AC012384, AC002350, AL049776, AL031432, AL034420, AC004966, AC002558, AL121603, AC005899, AC005412, AP006092, AC005914, A003147, AC005512, AC005274, AL035453, Z98051, AC009516, AC005632, AC004477, AC004851, AC002404, AC003684, AC007055, AL251973, AC007308, Z86090, AL022316, AL024507, AF001548, AL121655, AL049694, AL121825, AF035356, AC006538, AC009247, Z93023, Z93017, AC006312, AC005484, AC005932, AC004216, AC016830, AC007842, AC002302, AC004983, AF001549, AL139054, AL022476, AC005562, AC003010, AC007371, AB001523, AL033527, L47234, U62317, Z84487, AL122322, AL133448, AC004895, AC005102, AL049779, AC004033, AL031311, AP000553, AC006111, AL035659, and AC003042.
HTXSV06	6998	933377	1 - 523	15 - 537	AA570407, and U91323.
HTXSH08	6999	957886	1 - 880	15 - 894	AA411663, AL051223, AL051723, AA411664, AL043343, AL084824, AA704698, T99707, T99099,

HTXSC11	7000	965536	1 - 403	15 - 417	and AA091981.
HTXSA04	7001	926338	1 - 458	15 - 472	AA635858, AH20572, and AC000353.
HTXRS08	7002	957919	1 - 504	15 - 518	AA683094, and AC000299.
HTXRA02	7003	918089	1 - 352	15 - 366	AA937176, T97020, A1923659, AW089216, and H46012.
HTXQ311	7004	965084	1 - 617	15 - 631	A1932351, A1168608, and AW081230.
HTXQ007	7005	952064	1 - 342	15 - 356	A1038370, and A1954900.
HTXQ0471	7006	869147	1 - 660	15 - 674	AA731476.
HTXQX07	7007	952067	1 - 431	15 - 445	AI695376.
HTXFPX72	7008	916162	1 - 965	15 - 979	AA251181, A1761000, A1128484, A1276232, AA251078, R11531, AA721210, R10456, A1364695, A1766309, and AA832036.
HTXPPV03	7009	922905	1 - 652	15 - 666	AA001407, and AL022312.
HTXOR85	7010	869249	1 - 578	15 - 592	T81624.
HTXOO015	7011	869261	1 - 435	15 - 449	AA772570, and AA229433.
HTXOO012	7012	872368	1 - 383	15 - 397	A1439548, A1824598, A1524088, AA809903, AA418732, AA625848, AA491295, A1399785, AA879121, AA738446, AA776396, AA463264, Z39342, AW246459, H19238, AA872635, AA418786, AA095581, AA463616, A1613441, A1192269, AA417678, U87803, and A1405007.
HTXOKS1	7013	869265	1 - 513	15 - 527	AA164895, A1216978, AA470578, AA470574, A1151261, AB023165, AL023876, AC004859, AC006111, AC007684, AC002546, AL080317, AL121756, AC004913, Z82178, AC007308, AC002470, AC000097, AC006547, and AC000075.
HTXNJ60	7014	869259	1 - 722	15 - 736	AA255981, and AC005229.
HTXNG04	7015	926992	1 - 886	15 - 900	AA700155, A1241528, R92115, A1051224, A1248652, A1248349, H80550, H80606, A1045388, A1680997, A1560952, W78724, and AL031708.
HTXNFI1	7016	869300	1 - 592	15 - 606	H90484.
HTXNA19	7017	953848	1 - 884	15 - 898	AA872066, A1700737, H13313, T51880, A1458617, and R41292.
HTXNM201	7018	915250	1 - 304	15 - 318	AA078115.
HTXNMU37	7019	948611	1 - 702	15 - 716	H74136, H54178, H54603, AA526630, AW197983, A1986083, P25083, AA548968, AA492584, AA706631, A1192278, AA056619, AA487726, R32162, AA457685, AA613609, AA640797, AA481760, A113327, AA282951, A1370337, P27234, F36360, AA467961, R31574, AA583381, A191139, E27108, AA302943, AA082567, AW245331, A1300597, A1048296, A113757, A1653465, AA400990, AA56957, AA854403, T74690, A1073724, A1417496, A1738741, AA936734, AA233462, A1936783, A1641336, AA838660, A1283329, AA182577, A1862213, AA111897, A1280500, R59728, AA653228, A1614864, A421783, A1701712, A101265, A1755227, A1860414, W31892, AW246579, AA074086, A1458023, A1865375, R61358, A1568260, A1798292, A1491990, AA550837, A1609107, A1859368, AA373304, A1431442, AA745841, A1475297, A4419230, AW083918, A1830186, AW246558, A164946, A1185856,

					<p>A1559275, A1826401, A1703335, AA61792, A1708175, AW438757, N95424, AW410561, AW007196, A1911641, A1633570, A1083258, A1859952, A1515642, AW440318, A1088921, A805126, A1687410, AW024584, A1928786, A1963768, A2216659, T92957, A1537380, A1954648, P04839, AA776900, AA470586, AA598889, AA452398, AA464918, AA298788, AW131420, AA4228473, AA657752, AA947371, N69226, A1188427, A1861961, A1611533, A1612070, AP000115, A1060602, A1312641, AF015720, AC005829, AC004526, A1229041, AC004890, AC004777, A1031733, U95742, AC007216, AC005338, A1031657, AC007690, AC004186, AC004987, AC005102, AC012039, AC000357, A1030995, A1020863, A131005, AC007021, AC005183, A1024498, U34833, A1021155, AF000131, A1020209, AF069291, AP000501, D16641, AC006101, A1031846, AF000248, U07000, A1053460, A1117339, A1008718, A1049697, AC004895, AC004966, AC007057, AC002559, AC003084, AC004598, AC003098, AC002310, AC005911, AC006130, Z84467, A1196969, AC006972, AC005495, AC007201, A1049632, A1135744, AC0065015, AC005071, Z84469, AC006088, X73637, A1049843, Z69917, AC005952, A1080312, AC005161, AC004070, AC006409, AC004834, A1131757, AP000459, AF001550, AC005821, AC005723, Z81364, AF207550, AC005954, AC003104, AC005225, AC002300, AC000025, AF001549, AF126403, AC005527, A1139054, AC003101, AC004589, Z83851, AC002477, AC004079, A1033517, AC002551, Z11900, A1020359, AC006047, and AC005218.</p>
HTXMR30	7020	869312	1 - 663	15 - 677	A1138731, and A1149649.
HTXMR30	7021	841875	1 - 709	15 - 723	<p>AW245527, AA452288, A1134389, R02507, A1160583, W20079, W15650, B88492, A1191171, AA305146, AA312380, AA355989, AA356238, Z45454, R10259, T53506, R88474, AA353467, AW401924, AA065025, AA133146, AA321117, T39247, AA321753, AA352107, AA359404, AA115720, AA356308, AA329808, T97388, A1637593, AA341639, R21692, T81231, AA425167, R84510, A1189655, R47188, AA628011, AF100761, A1050361, AC006049, AP000312, and A1023049.</p>
HTXMC72	7022	875290	1 - 430	15 - 444	H72109, and AC004686.
HTXLS08	7023	958357	1 - 1138	15 - 1152	<p>A1084218, A1797791, A1439030, A1479025, A1436557, A1027473, A1440506, A1873534, A1243660, AA744809, A1218347, AA766305, AA938672, AA765757, A1475702, AA279525, AA806852, AA805971, A1669506, AA772543, A1364913, AA281541, AA768800, A1701372, A1382260, AA765148, AA627572, A1243662, and AA016005.</p>
HTXLN70	7024	756630	1 - 649	15 - 663	R94410.
HTXLI10	7025	963602	1 - 629	15 - 643	A1638848.
HTXRP30	7026	487401	1 - 486	15 - 500	
HTXKN65	7027	869345	1 - 390	15 - 404	AA613878.
HTXKM37	7028	869347	1 - 479	15 - 493	<p>AA903764, A1859744, AA578066, A1800343, AA486680, A1044339, AW265279, AA630845, F31066, F37059, A1679759, AA3138238, AV242031, AA571000, AA568204, AA570740, AA483606, A1611389, A1023350, N66927, A1884404, AA804694, A1022796, AA338237,</p>

					AA340226, AI537800, AI271762, AW275432, H62550, AA487209, AL042735, AA486588, AA480486, AC000079, AC004622, AF111167, Z97054, AL117258, AL135783, AC004448, AC007546, AC007151, AC052224, X87344, AC007684, AC007637, AC005392, AL035555, AC005005, AP000555, AL121694, AL031577, AL121757, AC007057, AL049872, AC004558, AC005360, AL031118, AC009946, AL049745, AL096701, AC005031, AC006241, AC002432, AC004106, U80017, AC005229, AC009225, Z99716, AL031281, AC004491, AL109759, AC007899, AC002470, AF015416, AC007687, AL022578, AL049833, AL008712, AC005520, AC005291, AL049713, AL022336, AL031311, AC008008, AL049829, AC007052, AC004893, AL023575, AL031733, AC007308, AC004785, AC005071, AC009542, AL035088, AC009330, AL007111, Z93096, AC004417, AF053336, Z93930, AC005399, AC004583, AC0094967, AC005881, Z97055, AL023580, AC005887, U7924, AC006121, AL117329, AC003037, AF031076, AL109628, AC002554, AC004874, AP000688, AC006251, AC004916, AC008124, AC007488, AL080243, AC006205, AC006581, AL133500, AC004985, AF109907, AC004002, AF031078, AC005746, AC005280, AC007240, AC012627, AL049835, AF030876, AC004458, AL031673, AC006512, AC004662, AL079295, AC006530, AC004673, AC006271, AP000030, AL136504, AC007750, AL022315, AC0089501, AB023049, AC005237, AC006946, Z96074, AC003029, AC002040, AC004933, Z93020, AC000003, AC002553, AC007225, AB026898, AP000359, AC002502, AC010072, AC002381, AC004470, Z84487, AL031848, AL050333, AC003950, AL049634, AC006392, AL133355, AC000353, AC020663, AC005138, AC011311, Z98884, Z84467, AL049856, AC007130, AP000212, AP000134, L77570, AC005386, AL034402, AL031287, AC005484, AL034420, U91318, AC004409, AP000432, AL049646, AL009179, AC008044, AP000350, AC005209, AL121658, AC004234, AC005969, AC007999, AE000659, AC003957, AL020997, AC002310, AL020995, AC007676, AC005066, AL033527, AC008014, AP000558, AL034412, AC007388, AC005317, AC004752, AC002300, AC002312, AC005703, AC007021, AP000251, AL006345, AC008072, AC006130, AL050348, and AL022323.
HTXKX024	7029	677101	1 - 271	15 - 285	R85618, AW451329, AL342905, AL042764, T12565, and AC0006241.
HTXKX096	7030	796330	1 - 501	13 - 515	AA152462, and AA152463.
HTXKX031	7031	697838	1 - 561	13 - 575	AL043095, AA227966, AA227802, N79681, AL688963, AF198234, AA308708, AA643502, W89152, AA767864, AL111171, AA309764, N55560, A914747, AL049646, AC005822, AC005988, AL035416, AC004943, AP000555, Z77249, AJ011930, AL031584, AL132749, AC004616, AC004079, AL024498, AL049843, AC006478, AJ006995, AC005386, AC002524, AL049911, Z84487, AL049709, AC005011, AL031985, AC004408, and AL049874.
HTXKX002	7032	919683	1 - 643	15 - 657	R72784, H45937, AL682220, U51280, and AC001228.
HTXKX064	7033	746471	1 - 605	15 - 619	H73594, R94521, H54422, H65481, A677973, AL032897, AA005280, AA005196, AA453866, N77694, and AC003973.
HTXKX077	7034	870446	1 - 592	15 - 606	AA149774.
HTXKX061	7035	741746	1 - 928	15 - 942	AL912179, AA706272, AL627711, AT733424, AW236776, R61531, AE337736, R48982, R18061,

HTXJPI17	7036	663123	1 - 455	AA024568, AA449473, and D80433.
HTXJO80	7037	871594	1 - 440	AA026098, AA025198, AA025117, AA789331, AL025891, and AW086422.
HTXJO78	7038	773508	1 - 269	HT1834, W90335, AL660357, AW204190, AA490598, AP983576, T83715, R00174, and T77359.
HTXJN39	7039	566290	1 - 321	N56725.
HTXJK20	7040	423763	1 - 490	AA775097.
HTXJC08	7041	957757	1 - 725	AA191116, and AC004584.
			15 - 469	AL039924, AL045794, AL036630, AL044364, AW013814, AL044412, TU0291, AW450335, TZ4119, AL039439, TZ4112, AL036630, AL039476, D51250, AL042334, AL039521, AL040992, AL039109, AL038531, AL037726, D80043, AL039629, AL039623, AL039648, AL038837, AL039074, AL039678, AL039108, AL039538, AL039564, AL039156, AL039659, AL039566, AL039509, H00069, D80253, AL039128, AL044407, AL036973, AL045337, AL037051, AL045353, AL039386, AL039423, D59787, AL045341, AL042909, AL039410, AL039150, AL044530, AL038821, AL038025, D80219, D59275, AL036725, AL535983, D80227, AL043422, AL043445, AL043423, AL043586, D80240, AL044413, AL043441, D80210, D51423, T23947, D80134, AL036196, D59619, D80391, D80193, AL037639, AW451070, AL037615, D80196, AL036767, D80949, C14227, AL535783, AL039085, AL036617, AL043613, D59927, AL043585, AL037526, D80366, D80168, T23638, AW452756, R47728, AL036238, AL036679, T11051, AL044178, AL037601, D81026, D50995, AL039504, C14014, D80045, AL039842, C75259, AW297822, AL036964, AL036733, AL036158, AL037027, AL039550, AL036924, AL037054, AL036765, D59889, AL043840, C15076, AL038851, AL037177, AL037047, D80022, AL036998, D80038, AL036418, AL036227, AL039472, AL037643, T23659, AL036133, AL037082, D80195, D59467, AL036163, T11417, AW293068, AL036207, AL557751, D58283, AL037124, D81030, AL037021, AL040947, D80188, AL039576, AL036191, AL036167, AL036132, AL037679, AL037049, AL036190, D51799, AL037600, D80378, F13647, AL036139, T03269, D80522, T23656, AL036152, D50979, T48598, C14298, D80212, AL036900, Z21582, AA514190, AL037178, AA283531, D59502, AL048425, C14429, D80164, D59695, AL039555, D59839, AW451416, AL037085, D80166, D80269, D52291, D80268, Z25782, D80024, D58253, AL037569, Z99396, AL036174, AL036808, AL036953, D59627, D57483, D81111, D59610, AL044354, D80241, AL036150, AL910186, C14389, C14331, H00072, AL036288, D51079, D51060, AW178893, AA305409, AL038043, AW450376, D80014, AW177440, D51022, AW179328, AA305578, AW178775, AL044447, AW378532, AL037077, AW376761, AW352158, AW369651, D51213, AA514188, AP065856, D80251, D51097, AL557774, D80248, D80064, AW178762, AW177501, AW177511, AL037002, TU02974, AW360834, AA514186, D80133, AL039417, AW360811, Z25783, C14407, AW352117, C05695, AW176467, AW378540, AW375405, A25909, A86792, A44171, AR062871, A84776, A84773, A84775, A84774, AR037157, AR017907, AR062872, AR062873, AR067731, AR067732, A58322, A91750, A20702, A43189, A43188, A20700, AR036905, A85396, A95052, A95051, A98167, AL01361, A38214,

HTXJA16	7042	767696	1 - 428	AA489147, T63847, and T63647	A95117, A93963, A93964, 156772, 195540, AR018924, AR031374, A18053, A63067, AR043602, A51047, A63064, AR043603, AR018923, A49700, A48774, AR043601, A63072, A23334, A75888, A48775, T0384, A18050, AR068506, A60111, A23633, AR015996, 103343, AR007512, A23998, AR000007, AR015961, A58521, A85477, I63120, I60241, I60242, AR002969, AR054109, E12615, AR022240, A81878, AR035193, A92133, A38524, E14304, A24783, A234782, A58523, A27396, AR027100, I28366, I06859, A49045, E16678, A82653, E16636, E13740, A93016, I25027, AR038762, AR000006, I26929, I44515, I26928, I26930, I26927, A58525, I08890, Y68177, I44516, A58526, A91753, AR031375, A1244003, A13038, A29289, AR025207, I18371, AR029417, AR028669, AR028668, AR028667, AR028670, AR067733, AR029418, AR067734, AR017908, A68112, A68104, I62368, AR031488, I13521, A59867, I25048, I44531, A84746, A13349, A64998, I15353, A17115, A18079, AR028672, AR038066, I50882, A64093, I66495, I66494, I13349, I66498, I66497, I66496, I66486, I66487, A07699, E08322, T74623, A71440, A71435, A60109, A70040, AR028564, A98420, A98423, E08432, E94336, A98417, A98427, I01968, A83642, A13388, E09974, A02228, E00954, E00952, E00955, I08049, A49989, A43960, AR021440, E03165, E02221, E13364, A10360, E02679, E02104, E02098, A92666, E02001, E01718, E02003, E02102, E03550, A28163, E02100, E01997, A93998, E02291, E02292, E02293, E01999, E02396, E03237, E01563, E02431, E01693, E01696, A92668, AR003163, AR005154, AR005157, AR005160, I09250, AR005153, A92667, E01024, AR050583, AR005084, E02430, E01148, E12527, E01503, AR005165, E12523, A24632, A49701, A62009, E10416, I77211, A95096, I70974, I31847, I31848, AR060676, A95106, A95105, A80776, A91965, E01324, I08638, E01614, A80474, A94048, A94061, I08776, A80477, A80475, A80475, A94046, A94054, I63560, AR031529, A49428, I63561, I63563, E16036, I84556, A20338, A20357, and A84555.
HTXJA17	7042	767696	1 - 428	AA489147	
HTXJA32	7043	699152	1 - 548	T63847, and T63647	
HTXJGH41	7044	712566	1 - 241	W86936, and AC00499	
HTXJGB85	7045	783418	1 - 448	W86936, and AC00499	
HTXFR89	7046	790276	1 - 399	W86936, and AC00499	
HTXFN90	7047	537392	1 - 361	W25596, A815642, AA417302, AA1100476, N27984, AA314322, AA045597, AA661773, AA649285, AA3306867, D82429, AA3310276, R89903, AA130829, R83064, AA298770, H81350, AW382032, AA297193, W22908, W406048, AA344066, AA100050, N51146, AA370966, AA382073, W38488, T85780, AW377665, A314221, A3334159, A1122042, and AC007842.	
HTXFN90	7047	537392	1 - 361	W25596, A815642, AA417302, AA1100476, N27984, AA314322, AA045597, AA661773, AA649285, AA3306867, D82429, AA3310276, R89903, AA130829, R83064, AA298770, H81350, AW382032, AA297193, W22908, W406048, AA344066, AA100050, N51146, AA370966, AA382073, W38488, T85780, AW377665, A314221, A3334159, A1122042, and AC007842.	
HTXFN73	7048	824543	1 - 289	W25596, A815642, AA417302, AA1100476, N27984, AA314322, AA045597, AA661773, AA649285, AA3306867, D82429, AA3310276, R89903, AA130829, R83064, AA298770, H81350, AW382032, AA297193, W22908, W406048, AA344066, AA100050, N51146, AA370966, AA382073, W38488, T85780, AW377665, A314221, A3334159, A1122042, and AC007842.	
HTXFN63	7049	745316	1 - 295	W25596, A815642, AA417302, AA1100476, N27984, AA314322, AA045597, AA661773, AA649285, AA3306867, D82429, AA3310276, R89903, AA130829, R83064, AA298770, H81350, AW382032, AA297193, W22908, W406048, AA344066, AA100050, N51146, AA370966, AA382073, W38488, T85780, AW377665, A314221, A3334159, A1122042, and AC007842.	
HTXFN53	7050	537391	1 - 425	W25596, A815642, AA417302, AA1100476, N27984, AA314322, AA045597, AA661773, AA649285, AA3306867, D82429, AA3310276, R89903, AA130829, R83064, AA298770, H81350, AW382032, AA297193, W22908, W406048, AA344066, AA100050, N51146, AA370966, AA382073, W38488, T85780, AW377665, A314221, A3334159, A1122042, and AC007842.	

HTXFN23	7051	537393	1 - 193	15 - 207	AA649055, AA676720, and Z68284
HTXFH43	7052	537397	1 - 337	15 - 351	AW236547, W70044, W70260, and AC008545.
HTXPH20	7053	537398	1 - 204	15 - 218	
HTXFG29	7054	669833	1 - 261	15 - 275	
HTXFF96	7055	796309	1 - 623	15 - 637	
HTXFF93	7056	934438	1 - 553	15 - 567	T81719.
HTXEV18	7057	869406	1 - 403	15 - 417	
HTXEX83	7058	780277	1 - 340	15 - 354	R10220, AW167240, AW043624, AA290774, A741670, and AC002519.
HTXEB90	7059	789161	1 - 441	15 - 455	N67034, AW135346, AIG34553, AB30652, AW190088, AIG38854, AII139333, AL040317, N53444, AID15747, AII807577, AII758230, AA586929, AA808566, AA218821, and AL022393.
HTXEC96	7060	796561	1 - 316	15 - 330	RI1584.
HTXEA45	7061	723401	1 - 492	15 - 506	AA055878, and AII733756.
HTXDZ56	7062	733641	1 - 411	15 - 425	H54720, and H68884.
HTXDW32	7063	695559	1 - 1083	15 - 1097	AA203535, N69313, AW104800, AII345794, AII345704, AA465689, AC004554, AC002470, AC004499, AC005037, AC003666, AC005577, AII034451, AC005529, AC006536, AC004782, AC002288, AC006694, AC003921, U91323, AC005899, AC006479, Z81369, AII136295, Z98051, AII035423, AII079295, AC002365, AC004983, and AP000036.
HTXDJ77	7064	772473	1 - 285	15 - 299	W07454, AII934203, AB000878, AP000506, AB000882, AC004184, AC004173, AC004170, AB023058, AP000521, AII022723, AF055066, AC006048, AP000509, and D84394.
HTXDD24	7065	888612	1 - 416	15 - 430	
HTXCW50	7066	724650	1 - 713	15 - 727	AA463609, AII67145, AII149126, AW301636, AII918887, AW004869, AA701246, AII659509, AA463256, AII918865, and AII202534.
HTXCS84	7067	783262	1 - 69	15 - 83	
HTXB188	7068	529663	1 - 366	15 - 380	
HTXA W03	7069	921906	1 - 351	15 - 365	AA497655, AII128840, R60767, AII345232, AW072868, AII933264, AW295282, AII673318, N40760, AII340591, AII583811, AW268087, AW086332, AII284621, AW269077, AW301308, AII792895, AII12160, AII311031, and AW268945.
HTXAK96	7070	796612	1 - 554	15 - 568	R96938, and AB020866.
HTXAJ34	7071	707050	1 - 393	15 - 407	R23649.
HTWL177	7072	839177	1 - 533	15 - 547	
HTWL158	7073	869478	1 - 540	15 - 554	AA917800, AA284120, AII354369, AA515148, AA805901, AII459866, AII496716, AII890579, AA504892, AII038527, AII226260, AII629939, AA485553, AA904211, AII189833, AII201668, AII018726, AII133083, AII341172, AII32786, AII791971, AII732671, AII30568, AII666555, H86679, H30595, AA434078, AA077242, AA012829, AII654658, AA678616, AA831801, AII089016, AII036549, AA832016, AA302966, AA666272, T05617, AA483173, AII317023, AII588871, AA515745, AII911659, AII283938, AA077619, AII354677, AA036655, AII613419.

AW105346, AA449293, AW008184, AA075807, AA564753, R83585, A1246061, AA831997, A1300818, A1310992, A1583259, A1135654, A1054090, A1037006, W27084, AF0078821, Z98473, AW390284, A1347665, AA644223, A1249853, AA581498, A1284543, A1472736, A1254570, AA774119, A1219644, A1251034, A1251203, A1251284, AA404568, AW019954, AA653057, AA678932, A1250552, A1267356, AW081610, A1039930, A17162303, N67313, M78021, A1762047, A1239592, AA381104, A1254508, AA501617, A1889995, A1251696, A471786, A1041375, A1139968, A827383, N73203, AA126814, AA508418, A1860535, A1871691, A1830490, AA340003, W341882, A1816130, AA741301, A1521679, A1712881, A1590404, A17238495, A1191456, N22400, AW439663, T79993, AW263847, AA579399, A1760527, A1189062, A1762138, A17156882, A174692, A1815940, AA482323, AW084840, AA408767, AA744449, AA744465, AA745470, AA019043, T10218, A1679759, A1973173, AA4093852, A1114645, T34066, A1251241, A1362052, F18533, AW262466, W04322, A1635475, A1929298, A1929825, A1003172, A1042753, A1561043, T60940, N57057, R02063, T40308, A1751780, AA020882, T07285, W60516, AA832124, AA192293, A1744937, A17082076, AA662614, H64905, AA828911, A1017733, AA339432, AA7316599, A114494, H41462, N88923, AA756713, AA780648, T94714, R1455, AA360609, AA757646, AA460880, A17028834, A17074398, AA743884, AA167179, A1761566, AA373861, AA988600, T48770, AA508070, A1445373, AA810317, AA423449, A1925812, H59797, A1355559, AA429942, A1751049, A1891075, A1E64760, H64884, A17079737, A17002221, A1049780, A1700765, A17004671, A17004817, A1702997, A1700841, A17005332, A17006088, A17005841, A17005832, A170048729, A17000084, Z94802, A17000292, A17009905, A17000111, A17000043, A17035252, A17002090, A170002331, Z83820, A17007421, Z84467, Z83826, A17001049, A17000694, A17005544, A17004409, A17004207, A17004821, A17003529, A17000355, A17007066, A17009179, A17049743, A17007934, A17007240, A17006511, Z73358, A17005004, A17004216, A17022320, Z69653, A17005668, A17007528, A170023048, A17002302, A17008372, A17000111, A17004770, A17004228, A1700758, A17003692, Z92546, A17034369, A17000003, A17000353, A17003667, A17005618, A17031651, A17031675, A17022337, A17006091, A17000118, A17004815, A17005923, A17003982, A17004253, Z92545, A17022394, A17007028, A17006581, A17134726, A17005328, A17000092, A17005250, A17049570, A17031729, A1717344, A17006950, A17000252, A1700956, A17005519, A17001052, A17007376, A17008636, A17034549, A17005327, A17006277, A17031007, A17022163, A17002468, A17008543, A17007387, A17006544, A17000511, A17031284, A17004989, A17004938, A17030321, A170080286, Z98050, A17005180, A17020720, A17006537, A17005597, A17004769, A17006255, A170096769, A17004662, A17003070, Z83844, A17033527, A17005089, A17005071, A17002350, U73629, A17005530, A17045555, Z99127, A17031315, A17006146, A17049742, A17049760, A17004069, A17031584, A17003013, A17005081, A17005209, A17006296, A17004673, A17109963, Z68285, A17024534, A17005578, A17006561, A17004973, A17005800, A17005300, A17004910, A17002115, A17008116, A17004757, A17031282, A17031683, Z97056, A17031673, A17005086,				
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HTWLD61	7074	741610	1 - 204			AC004982, AC020663, AC005027, U96629, U91323, AP000501, AC007537, AC006946, AC002480, AC005015, AJ229041, U95743, AL096829, AC006130, AC002467, AP000695, AL031297, Z84474, Z85987, AC003085, AL078583, AC007688, AF095909, AC002542, AC002432, AL031123, AC006641, Z72521, Z73988, AL050347, AC005621, AC003031, AF003626, AC004254, AP000503, AP000359, AL031447, AC004130, AC006141, AC006509, AC006251, Z83846, U80017, AC007227, AL022165, AC005274, AL096791, AL022313, AF001549, AL035587, AF031077, AC004494, AC004224, AL118507, Z84486, AF031078, AC000159, AL031774, AL033540, AF030876, AL031666, AL034561, AL021391, AF017104, AC005220, AC016831, AL050318, L81902, AB001914, Z83854, AC002128, AC006344, AL034429, AC002369, AL049575, AL117354, AC005213, AF165176, AC007283, AC006344, AL034429, Z82215, AC007276, AC005695, AC007637, AL035698, AL096703, AC003984, M15366, AL050129, X56760, AC002286, AC005565, Z72006, AC005775, and Z94801.
HTWLD10	7075	964195	1 - 367			AI942248.
HTWLC51	7076	725533	1 - 279			R05388, and AA832101.
HTWKZ86	7077	785318	1 - 356			AI922217, AA736485, AL048914, AA805014, AA053870, AA664879, AA570557, AI421075, AI075935, N66944, H52397, AC005519, Z83819, AC005483, AC006948, AC002549, AC005317, AC005385, AC004106, Z84469, AF017257, AC005095, AC007055, AF196779, AI109865, AC005015, AJ011930, AC004686, AC003010, AC005832, AC004765, AC005859, Z99128, AC007227, AF196969, AC006362, AL031281, AL049691, Z93017, AC004997, AC002492, AF047825, AC006084, AC005081, AC009464, AL133445, AC004820, AF033356, AP000135, D26607, AC004526, AC006960, AL024509, AP000031, AC005495, L77570, AJ251973, AC005529, AC004382, AC006205, AC005874, AF134471, AC000357, AL034420, AC004882, AP001040, AF207550, AC009263, AC003108, AL034429, AC012384, AC004150, Z98742, AC002312, AC005189, AL050307, AC004996, AC005899, AL035659, AL049745, AL079342, AC004492, Z97054, and Z84722.
HTWKZ46	7078	718872	1 - 352			AC006207.
HTWKZ35	7079	494833	1 - 115			
HTWKZ28	7080	686254	1 - 427			F23327, AP62030, AJ425924, AA644090, AA833896, AA526625, AA526326, AA833875, AL046519, AC004778, AC004491, AL021918, AC004890, AF003626, AC008154, AL022162, AC007011, AC005562, AL009181, AL021940, AC007993, AL049611, AL021939, AC002128, AC007298, AP000557, AL008719, AL049631, AL049643, AF200465, AC005874, AF134471, AC003029, AC006236, AC006080, AP000695, AC004637, Z98949, AC005722, AC004169, AC002369, AL096701, AL035089, AC002365, AC005823, Z82195, AC005538, AC005081, AC003106, AP000008, AC003015, AC007488, AP000704, AP000967, Z81169, AL079295, AP000030, AF000212, AP000134, AC004911, AC007055, AC005410, AC006257, AC003871, AC005972, AC006111, AC005914, AC004682, Z98941, AC007263, AB017602, AC004686,

HTWK227	7081	812689	1 - 365	15 - 379	<p>AL022577, AC007376, AL137578, AC005412, AC016831, AC005300, AC002404, AL031685, AC006538, AC009516, AC006075, AL133353, AC001231, AC004659, AL121825, AT290942, AL133244, AP000103, AL109627, AC005599, AC002119, AP000330, AL031577, AC005450, AC005520, AC006946, AC008101, AC005377, AC004912, AC006333, AC002492, AC004508, Z97632, Z93023, AC004234, AC004953, AC003663, Z84487, AP000056, AP000171, AC007731, AC002480, AC005500, AL035684, AL022315, AC006430, D87675, AC007191, AP001548, AP000210, AP000132, AC000353, AP000240, AL022318, AC016830, AP000269, AC002563, AP000014, AL022333, AC005486, AC0007563.</p> <p>AA515723, AL185394, AA484892, AA480486, AA469230, AA654482, AW265688, AL049701, AA846923, AW390284, T08386, AA768179, AA229983, AL929796, T94072, AL635440, AW162750, AA601212, H62923, AA502110, AA605266, T03576, AA573000, AL137946, AH72736, AW419389, F31811, AL915081, H24957, AA757621, AW440568, AL0369076, AA678932, F31867, AW068580, AA632556, AW081610, AA720582, AA429481, AW392414, AA515733, H91844, AA338086, AL889995, T50490, AL624379, F23338, AL471455, R70883, AL283938, W63553, AL223968, AL887243, T432298, F00533, AL564301, AL347665, AL280535, AW150781, AL648514, AA614304, AL270177, AA524800, AW381823, R70884, AA302934, R94436, AW151247, AA832016, AA831801, AA808725, AA687542, AL355103, AA347927, AL053673, AA640252, AA228979, AA229823, AA702618, AL2409525, Z25918, AA565319, AA515138, AL863196, AA507675, AA516320, AA503142, AW083934, AL590442, AL281818, AA225392, AL500668, AW407632, AW088130, F00688, AA610433, H67064, R34070, AA225754, AW166920, AA630476, AL926102, AW087816, AL762302, C06028, AL799421, H96146, F34506, AA225100, F09355, AA678950, AA481887, AL340151, F04475, AA632845, AL135654, AW008184, AL246996, AA582746, T49933, AA347930, AA568314, AA552724, AL679442, AA550959, AL679952, AL368732, T02827, H86579, AL783911, AL619987, AW078821, R80563, AA653291, AA469327, AL859438, AL583532, AL375294, AL142551, AA773042, AA356376, AA846482, AA665532, AL340858, AC003070, AL031591, AC005031, M87889, AL009181, AC004230, AL109952, AL022476, AC004999, AP000343, U80017, AC005231, AC006077, AL021391, AC004543, AF109907, AC004491, AC007099, AF152363, AC006449, AC005529, AC003101, AC005821, AC004752, AP000493, AC005209, AL035071, AC002565, AC004099, AC007686, AC007437, AC004796, AC004882, AF134726, AC004883, AL021977, AC006515, AC003104, AC004838, AC002549, AC008116, AP000355, AC005081, AL139054, Z98742, AC002542, AC006023, AP000201, AP000536, AC005663, AP000704, AC005921, AL117351, AC002082, AP000697, AL033392, AL132712, AC005940, AC005800, AP000301, AL021453, AL034420, AC004106, AL003147, AL049839, AC004125, AC005409, AL049843, AL049589, AP000503, AL022328, AC005971, AL511333, A76958, AC002559, AL122020, AF024533, Z988884, AC002288, AC004760, AC005866, Z98048, AP001051, AC005291, AC0020663, AL078624, AL008718, AC004962, AL246003, AC005071, AC005632, AL121757, AL035685, AL049694,</p>
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HTWKZ15	7082	659934	1 - 355	15 - 369	<p>Z98304, AC0053815, AC002996, AP000354, AC005086, AL117258, AL135744, AC004383, AC008009, AP000461, AC003982, AC002477, AC005972, Z98946, AC005746, AC005234, AC003695, AL109984, AC003043, U73479, AL035413, AL022163, Z73913, AL117328, AC007637, U95739, AC007298, AC005630, Z98044, AC002091, AC000275, Z84467, AL008721, AC00960, AC006948, AC007225, AC004686, AC005747, AC007240, Z98966, AC002302, AC000039, AC002330, AC006088, AC005015, AL035405, AL035683, AF118908, AC001020, AF039906, AC006480, AC004673, AF048729, AL121652, AC004834, AC005225, AL034331, AL022238, AL031074, AC006040, AC000084, AL118497, AB022785, AP000037, AP000105, AC007566, AC006101, U74924, AC003108, AL033525, AC005325, AC005156, AC004638, AC007934, AC016831, AC007773, AC005036, AC004079, AC00492, AC004878, AC004905, AC004765, AL022323, AC005288, AC006597, AF205588, AC005488, Z82172, U51561, X64467, AC007066, AC006501, AF165926, AC009225, AF196972, AP003359, AC005962, AP000437, AF006487, AC005856, AL031286, AC004148, AC007371, AC004067, AC003029, AC004837, AF027974, AC006251, Z99291, Z83846, U85199, AC005619, Z97054, AP000065, AP000045, AC005342, AC005516, AC005229, AL020997, AC002395, AF196779, AF029308, AC005684, AL109827, AC002349, AC005484, AC002430, AL031668, AL035086, AL121603, AC007216, AC005899, AC004890, A006995, AC004819, AP000053, AC005152, AL021154, AC007030, AL049874, AC005664, AC003107, AC002543, AC006001, AL021546, AL021940, AF111167, AC005154, AC004844, AB014087, AL035458, AC006312, AC006064, AL133246, AC005722, and AL034555.</p> <p>AT754257, AA084439, AWA10409, AA642809, AW277174, AW327852, AW270768, AL291037, AT754064, AA579398, AT797998, AA53216, AA129746, AA904211, AA846923, AA618263, AL090377, AW238712, AL634187, AA809125, AL281818, AT754170, AA127222, AL039539, AW021951, AL521525, AL283312, AL889995, AA622801, AL479148, AW238341, AA741110, AA053784, AA831426, AA496369, AL035977, AW151247, W60612, AA679794, AA579130, AA577706, AA410788, AW151541, AW069412, AL311779, AL056177, AL457313, AL134278, AL809818, AW069227, N40092, AL207728, AW020150, AA600202, AA602906, AL745116, AC006080, AC004805, AL022326, AC006211, AL133246, AC009241, AL031643, AL049838, AC006965, AC018633, AL035086, AF111168, AL022336, AL117354, AC004382, AC005678, AC006511, AC007088, AL078581, AC006077, AL031276, AP000493, AP001053, AL022318, AL132826, AL050338, AL049832, AL023581, AC007652, AL035688, AL132777, AC008282, AC006026, AP000403, AC004885, AC005588, AC005036, AC007656, AL109985, AC005828, AL031287, AL031848, AL121216, AC008119, AC004028, AP000043, AC007015, AC002430, AC004158, Z95114, AC005225, AL034376, AL133396, AC002369, AC007384, AL022117, AC004478, AL109653, AL049650, U66722, AC006066, AC004910, AF047825, AF152363, AC006160, AC000094, AL132712, AL136504, AL122020, AP000532, AC004992, AC005157, AC006112, AC005969, AC004042, AC000085, AL035412, AC006257, AL121694,</p>
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HTWK741	7083	712142	1 - 437	15 - 451	AA281719, AA286940, AW271848, AA743292, R39726, and AA362177.
HTWK734	7084	703863	1 - 522	15 - 536	IN76304, and N76291.
HTWK807	7085	952841	1 - 307	15 - 321	AI000527.
HTWJY36	7086	708338	1 - 458	15 - 472	AW118886, AT741663, AH435117, R70887, AL199990, AL168416, AA285071, AL361897, AL215545, R70888, AL361901, and AF195821.
HTWJH08	7087	790185	1 - 193	15 - 207	AL302448, N92646, AW134987, AP050033, AA659232, L29349, X17648, A28928, L29348, U93096, S48539, AC005081, AC005399, AC002418, AP000511, AL049713, Z83840, AC004386, AC0010722, AC005406, AL079333, AC005899, AL022323, Z47066, and AL049872.
HTWJF89	7088	805706	1 - 449	15 - 463	AL138227, AL138226, H80610, AL133578, R12953, Z43397, H10281, AA486037, AA2170131, AA878478, N91220, H82800, AA488655, AA450874, AL18140, AL692200, AA932253, H80857, AI091568, AT68111, AA836363, AW274397, and AA829456.
HTWJF50	7089	911448	1 - 1533	15 - 1547	AI693688, AH089291, AL092178, AL239859, AA651942, AL057017, AA932953, AW205176, AA806301, AP911826, AW205734, AA439640, AL379127, AL049362, AW207182, AW270056, AA825776, AA291010, AL239585, AA235097, AA256500, AA291012, AA310652, H58752, AA824566, AW340433, D31147, AA256924, AA911804, D31268, D31363, AL243382, AA578487, AA504191, and AA504190.

HTW/JA.79	7090	559919	1 - 214	15 - 228	AA664604, AW069227, AA845639, T41284, AL932600, AL634187, N23913, AA483599, AW083934, AH457317, AA613257, H42271, AA595347, AA503298, AA682912, AC002288, AC007999, AL022318, AC004797, D00591, AF207550, AP000553, AL031577, AC003108, AC005500, AC004033, AL031767, AL023879, AC005071, Z95116, AC005823, Z95114, AC016025, AC005988, AC006211, AC004805, AL121603, Z84480, AC002369, AC003071, AL022396, AC005874, AF134471, AL137100, Z93930, AC005632, AL031846, AB000882, AL049694, AP005555, AL049869, AL050402, AC002470, AL133246, AL035423, AC000469, AP000692, AL049776, AL008732, Z83826, Z93241, AC007731, AC002495, AP000210, AP001332, AC004796, AL031281, AL031542, AC007681, AC005899, AL021154, AL009181, AC009263, AC004752, AF107785, Z97630, AC000353, AC009516, AL080277, AL031120, AFI28525, AC005344, AC007785, Y14768, AP000502, AC010077, AC003041, AC004408, AL049780, AL035587, AC007225, AL008715, AL035413, AC005399, AC007227, AC005089, U91326, AC005484, AC002300, AC006285, AL022722, AC005740, AL021155, AL035089, AFI34726, AL079295, AL031676, AC007099, AC002476, AC003304, AC007676, AC004057, AC007510, AP000505, AC006486, AL023575, AC005839, AL049589, AC003109, AL117694, AC005904, AL135960, AJ131016, AC004841, AL132992, AC004848, AC009509, AL033527, AC008984, AC004623, AL080242, AL049697, and AC006392, AC006208.
HTW/FQ.19	7091	586124	1 - 225	15 - 239	
HTW/FM.90	7092	582285	1 - 368	15 - 382	
HTW/FM.89	7093	786805	1 - 369	15 - 383	
HTW/FM.79	7094	841983	1 - 331	15 - 345	
HTW/FM.71	7095	760303	1 - 304	15 - 318	AA744539, AA501794, AA506744, AT83581, AA743445, N23896, AA586661, AA526426, AW250905, AW150524, AA679532, AL041373, AA535216, AL041526, AA207033, AA847702, T71535, AA352578, AL109612, AL139054, AL079342, AC005084, AC006449, AC002091, Z98749, U91323, AL117354, Z82975, AC004913, AC007160, AC007842, AC004999, AC007075, AC005971, AC004859, Z84466, AC006111, AL135744, AC002314, AC005288, AL049758, AL049843, U07562, AC006141, AD000092, AC004662, AC007253, AL109952, Z84483, AC005320, AC006531, AL110502, AC005535, AC005377, Z85986, U85195, AL049539, AC005207, AC007358, AL031291, AC006965, AC009247, AL078639, AL049569, M63543, AL031229, AF111167, AC002472, Z97053, AC005031, AL121825, AL121652, AC006511, AC005387, Z95114, AL035079, AC006211, AF029308, AC002312, AC004808, AC000658, AC003553, AC005057, AC005730, AC004019, AF207550, AR036572, U91328, AC007536, U90871, Z99716, I08101, M24461, Z84469, Z85987, AP000502, AF064862, AL049759, AL096701, AC005225, M63544, AC005071, AF124523, AF205588, AC005632, AP064865, AF019413, AC006262, AL049636, AC002115, AL024507, Y18000, Z97183, AC005411, AL035427, AC006006, Z84480, AC005696, AP000023, AC002468, AC002980, AC002476, AL034421, AB023051, AC005409, AL031659, AL021154, AC005280, AL022318, AC006530,

HTWFM48	7096	721587	1 - 351	15 - 365	AP000031, AC004876, AL022721, AL133246, AL033527, AP000555, AP000255, AL121653, AC002477, AC004554, AC005899, AF042089, AC007450, AC004821, AC002310, AL133249, AC007055, AL031390, AF135056, AC002377, AC005519, AC004745, AC008119, AC005874, AF134471, AC005670, AC005179, Z84484, AC004531, AC007136, AC005181, AC008405, AF046678, AL049538, AC005368, AC005215, AL031230, AC007308, Z83844, AC008040, AC006274, and AF165926.
HTWFE48	7096	721587	1 - 351	15 - 365	AP057460, H64908, H64907, H86105, H86095, AS386433, AC004884, AL049589, AC005539, AL003548, AL035458, AL109758, AL133312, AC005859, AC002449, AC004382, AL135660, AL131016, AC005921, AC009363, AC006205, AC005288, AP000194, AL031431, AC005548, AP000355, AC007055, Z85987, AC006950, and AL008718.
HTWFE71	7097	869491	1 - 596	15 - 610	H78965.
HTWFFH75	7098	767251	1 - 485	15 - 499	AA417751, and AW376554.
HTWFFH73	7099	761686	1 - 710	15 - 724	T86260, and AA001345.
HTWFFH42	7100	713667	1 - 626	15 - 640	T77812, T77718, and AL050379.
HTWFFG29	7101	800193	1 - 114	15 - 128	AL19208, AL0697463, and AL050379.
HTWFFD63	7102	745010	1 - 499	15 - 513	T77812, T77718, and AA009632.
HTWFEV89	7103	864553	1 - 708	15 - 722	N35696, R36291, AW3768228, Z47166, AL117446, AF084520, AF111162, and AF023451.
HTWFE090	7104	788559	1 - 705	15 - 719	AS099676, AA0017611, AA056081, AA001373, AA017554, AA053544, AA001463, AA018178, and AA054441.
HTWFE74	7105	785512	1 - 423	15 - 437	NG4473, and AL379859.
HTWBEH76	7106	876853	1 - 753	15 - 767	AL155698, AA307060, AA0331164, AW247756, AA378299, AA352789, AA359982, AA205909, AA006664, AA455322, AA356865, and AA205544.
HTWBE75	7107	767264	1 - 849	15 - 863	AA003230, W16522, AW003274, AL192577, H86814, H38845, AA813026, and N79989.
HTWDR91	7108	869526	1 - 433	15 - 447	AA522642, AA302866, AW062724, AL133297, H707446, AA568754, AL043808, AL046156, AA552856, AS552843, AL270117, AL031721, AC004686, AC005231, AC007536, AC005914, AL133445, AL021878, AC008066, AC003026, AL021154, AC004386, AL049761, AC004504, AC002467, AL135960, AL131016, AC007664, Z99497, AC006143, AC002350, AC006211, AC005295, AC005520, AC005525, AL049872, AT205358, AF111169, AC006538, AC005013, AP001035, AC004104, AL139054, AC002472, AC002349, AC005387, AC002347, AC009516, AC004666, AL049871, AC004087, AC005261, AC006130, AC004966, AC002492, AL033321, AC006257, U91321, AC007729, AC007792, AC004049, Z86090, AC002301, AC007057, AC007182, AL079342, AC003684, AL109627, AC007021, AL022316, AC006111, AC007387, U95739, AC004953, AC004804, AC004554, AC010206, AL008722, AC004448, AL131163, AC002418, AC004167, AL050333, AC003070, AC005399, AC002115, U66059, AP064861, AC001228, AC005251, AC005256, AL121655, AC007688, AC006115, AC008040, AC005913, and AC005913.

HTWDO06	7109	935644	1 - 448			Z99716, AC005041, AC006480, AC006079, AF200465, AC004895, AL031650, AC002558, AP000346, AF111108, AC005220, U85195, AC007735, AC004526, AC004797, AB000658, AL049760, AL034549, AL022322, AL034373, AC005859, L78810, AL117354, AL034417, AL035422, AC005088, AL133289, AP000553, AC002468, AC007204, Z93241, AL133244, AC004408, AC002550, AL031848, Z93023, AC003002, AC004453, AL022165, AL109628, AC005531, AL031588, AC006273, AC005242, AC002082, AL034423, AC005527, Z97053, AC009498, AC004002, AL035413, AC007240, AC005940, AC002310, AL022329, AF134726, Z84487, AL035086, AC007114, AC008125, AC006316, AL022302, AF190465, AC007014, AC004687, AC007277, AP000493, AC007043, AC007686, AC006544, Z98257, AC002119, AC004000, AL049569, AL078603, AL132994, U02531, AC007263, AC007050, AC000353, AL022476, AC005529, AP000350, AC006537, AC008372, AC005696, and AC004027.
HTWDB06	7109	935644	1 - 448			AF1609567, AF169571, and T05468.
HTWDB68	7110	755086	1 - 437			AA129656, and AA746901.
HTWDJ42	7111	713869	1 - 328			N77331.
HTWDI49	7112	723047	1 - 571			AA054396, AF743787, AF073458, AA018101, and AL044482.
HTWDL70	7113	844831	1 - 436			AC005696, and U772337.
HTWCL86	7114	575978	1 - 215			
HTWCJ08	7115	959591	1 - 401			AA888961, AW459896, and AA868282.
HTWCG06	7116	935642	1 - 443			AA279971.
HTWCD06	7117	935646	1 - 557			AA579292, and AC006465.
HTWCB69	7118	729244	1 - 457			T84278, and AA383674.
HTWBW72	7119	772117	1 - 230			AW135049, AV083547, RG1742, AF1568770, AF222656, AF041283, AF640653, AF1991607, AW236481, AF069723, AA705419, AF093706, AA425971, AA430741, AF006215, R02041, H61287, H28170, AA468148, AC006208, and AB1344.
HTWBV33	7120	594496	1 - 1041			AA985143, AC005089, AC004834, AC007227, AL133163, AC005071, AC005599, and Z83844.
HTWBV03	7121	869549	1 - 636			AA732381, AA824630, AA832097, N26752, AA808362, AA215352, AW085919, AA669001, AC006059, and AF184110.
HTWBV62	7122	742588	1 - 521			T83835, AA677864, AW261956, AW261950, AA298745, Z99715, Z99572, AC005482, AC005027, AC009501, AC007064, AC0066257, AL022100, U80460, AC004191, AP000517, AB023054, AL049872, AL021978, AC003007, AC005632, AC005697, and AC005229.
HTWBV67	7123	751752	1 - 447			AA056010.
HTWBL08	7124	959619	1 - 406			W56799.
HTWB04	7125	922175	1 - 395			AA838694, AW182504, AL150350, AF076812, AL373044, AW003341, AL083699, AA534930, AB87148, AF052125, AF620446, AF659373, AW206004, AF085282, AF522003, AF000517, AA741574, N67531, AW339317, AF695995, AF16152, AF092112, AA765164, AA808097, and AF620044.

HTWBE27	7126	683546	1 - 565	15 - 579	W37350, A1970621, A1810064, A1692716, A1818919, A1885136, A4743040, A1189957, A4760856, A18071071, A1433949, A4481996, A4825555, A4515413, A1200341, A19190996, A1795936, A1189529, A1824302, A4975839, A1695491, W37351, and A4481851.
HTWBE63	7127	745194	1 - 333	15 - 347	H92261, and AC0016025.
HTWBD84	7128	783120	1 - 463	15 - 477	A669991, H71504, H71176, and AC000118.
HTWBD61	7129	604245	1 - 555	15 - 569	AP000355, AC003950, AC005089, AC007151, Z69705, AC004754, AP000036, AC005300, AC007225, AB023048, AC005015, AC003085, AP000510, AC006441, A1109963, AC004813, and A1222336.
HTWA3469	7130	723141	1 - 432	15 - 446	HT4000.
HTWA348	7131	518825	1 - 327	15 - 341	A4743565, A4743563, A4742175, A1220263, T57857, T57938, and AC009304.
HTWAM25	7132	677506	1 - 744	15 - 758	A1810002, A1652845, A1808269, A1627238, A1671544, A1671088, A1634816, A1147359, A1206170, A1472278, A1568947, A4889568, A1036581, A1016893, A1307382, A1024362, A4961211, A1911594, H43229, A1041222, T26622, A457243, H11156, A1204388, A1674226, A4464060, N50195, H44677, A17303315, N49065, A1004849, A1188991, W19060, A1142365, T85312, A4100133, and R27291.
HTWAJ11	7133	967845	1 - 728	15 - 742	AW088739, A4453123, and A4449987.
HTWAE31	7134	725127	1 - 342	15 - 356	R16359, N57044, A4588892, A4584819, A4853105, H03307, R25111, H02478, A1031908, R02720, A1807471, A1827995, A1593366, H12509, A4412317, H2421, A4455577, A4305179, R23890, AW371415, H00834, R76442, A1025228, R31066, W79084, R37557, W00472, A1190303, R73757, R71169, H03862, A4393148, H72396, A4436117, N40362, H59895, A1345954, A4868538, R23710, H01351, R83423, A1291760, A4988977, A1311479, A1025986, R63278, A1083851, A1219986, A4932930, A1829710, A1836105, R65986, R76229, A1025986, R63278, R75983, A1142135, A1338679, N37092, A4305134, A1200426, A1720044, A4295914, A1808710, A1309975, A4905015, A1289227, A1911731, A18084515, A4976254, A4883578, W58740, A1830140, A1798704, A1332422, A1807161, A1222787, A4885823, T85666, A4884231, A1742423, A1148589, A176645, R73969, A4906270, A1991280, A1091541, A1040961, A4884285, A4843421, N26589, A1204236, A1091532, A1081663, A1091083, A4355561, and AF151810.
HTWAB85	7135	522346	1 - 294	15 - 308	A4522944, A4704012, A4809116, A1648583, A4070899, AC003007, AC005632, AC006064, AC007731, AC005500, A1031680, AC004659, AP000065, AC008033, AC007687, AC005338, AC006449, AC005015, AP000212, AP000134, AC006262, AC005102, AC004797, AC006332, A1031848, AC005081, AC002544, A1031767, AC005313, Z95152, AC005412, A1022320, AC005257, AC005899, AC006001, AC007384, AC004851, AC003070, AC0016831, AC004125, AC005261, AC002996, U91318, A1139054, AF045555, AC005696, AC005914, AC004167, AC007055, AC008101, AB001523, AP000552, AC005722, A1049779, A1035410, AP000044, AC002400, AC004967, A1031311, AC004996, AC005575, AC006120, AC004883, A1049780, Z84480, and U91326.



HTWAB65	7136	53745	1-419	15-433	<p>             AI187056, H82904, AI133350, AI246876, AA614055, AI119415, H91630, AA677886, T81869, AA625238, AI457464, AI049765, AC002072, AP000152, AP000151, AF035396, AF003625, AI031391, AI031278, U13657, AC007363, AC002524, AI117258, AC008012, AI049829, AB014088, AC004470, AC005969, AC004190, AC004687, AC009411, AC006971, AC004998, AC005061, AF101874, AI022575, AC004225, AC004948, AC007486, AF000516, AF036938, AC007100, U01882, AI035552, AF001905, AI022151, AI121654, AC006143, AI133249, AI117325, AC002463, Z75745, AC004384, AC004385, AC004025, AP000567, AC004103, AI049781, AC002395, AC002457, AI132826, AC004070, AC007751, AI109753, AC002980, AI031433, AP000083, AI027147, Z94470, AB020867, AC006197, AC004519, AC004020, AC005389, AC007380, AI031653, AI049589, Z83822, AC008041, AC005539, AC004020, AC007877, AI109620, AC003083, AI031651, AC000115, AI020989, Z97632, AC008123, AC007877, AI109620, AC003083, AI031651, AC000115, AI020989, Z97632, AC008123, AC005728, AC004979, Z83841, AI049612, AI118521, AC007312, AI109733, Z82975, AC004552, AI133233, AC003013, AC005535, AC004389, AF130342, AC003667, Z69367, AC002564, AI022160, and AI049177.           </p>
HTWAB37	7137	735153	1-350	15-364	<p>             AA836182, AI818453, AI345400, RI2683, AI371165, AA507984, AA420739, AC006946, AC005952, U85195, AC006456, AB000658, AC004447, AI035417, AC005043, AC004000, Z54334, U07562, Z95115, Z97054, AC004799, AI110279, Z87552, AP000295, AF088219, AI109758, AC005837, AP000044, AP000112, AI132708, AC004672, AI023374, AI035691, and AI035681.           </p>
HTWAB46	7138	522817	1-229	15-243	<p>             AI728861, FI3749, AA715351, AI039309, AI636734, AA381762, AV238016, AI135643, T07346, AA341120, AI751162, AW162288, HI2972, AI696793, AA804625, AI053489, AA302952, AA878407, AI973173, AI021366, AI050332, AI024507, AP000338, AC008149, AI022326, AI049694, AI049869, AI121754, AC007225, AC002470, AI121655, AC004990, AF126403, AC006449, AC005696, AC004477, Z75407, AC005089, AJ251973, AC003682, AC005703, AI049872, AC002492, AC005632, AC007731, AC005015, AC005500, AI078584, AC004408, AP000553, AF064860, AC004638, AC007051, AI022313, U47924, AC002430, AC002663, AC007384, AC008012, Z98048, AF129756, AI049829, AI021154, AP000096, AI034417, AC005057, AC005488, AI096703, AF109907, AI022067, AC001449, AC004079, AI031447, AC000852, AI031594, AC006121, AC005041, AI049636, AF000240, AC002350, AC005914, AC006511, AC004019, AC007066, U95741, AI022336, AI031296, AF053356, AC004491, AC005081, AC001288, AC004815, AC007546, AC005180, AC005722, AI023803, AC006538, AC009516, AI031589, U85195, AI022323, U02068, AC005071, AF165926, AI080243, AC005237, AC005323, AI121603, AC005740, AC005971, AI136295, AB000658, U91321, AC005102, AI031587, AJ003147, AC004983, AI117258, AC005229, AC005837, AP000556, AC004471, AC007308, AI109984, AI133245, AC004913, L77570, Z83840, Z93784, AC004991, AF030876, AI109627, AI109827, AC006116, Z95116, AI117340, AC005911,           </p>
HTWAB42	7139	714291	1-372	15-386	

HTWAB32	7140	54291	1 - 309	15 - 323	<p>AC005899, AC004525, Z99716, AP000201, AC005874, AF134471, AC005796, AF124731, AC005410, AJ006216, AP000097, AC002073, AC004253, AC005943, Z95115, AC005520, AC007151, AL121825, AL009181, AC005736, AC005004, AC005257, AC000026, AP000555, AL033392, AC002059, AC005067, AC005844, AC005239, AL035587, AC005231, AC004659, AC004752, AL049744, Z97053, AC010200, AL023575, AL049589, AL035410, AC005069, AC0016027, AC016830, AF111168, AC005189, AC007216, AF091512, AC007240, AF207550, Z93241, AP000510, AL079503, AL035684, AC002369, AL031311, AC008040, AP000347, AL034421, AL049538, AL133371, AL132987, AC005225, AC006948, Z82215, AP000346, AC007387, Z84814, AL035089, AC016025, AC004813, AC006285, AF001548, AL022316, AC003109, AC003007, AL031393, AC003962, Z98051, AC007226, AF001548, AL022316, AA630476, AW023975, AL174703, AA663579, AW275432, AA425283, AW409626, AL114543, AA493546, AL547110, AW084152, AA631915, AL282479, AL254267, AL070810, AA555232, AA601376, AL575904, AW409621, AA280886, AW026305, AL621950, AW339619, AL191937, AF568376, AL039436, AL1310670, AW104161, AL061313, AL446618, AL361090, AL349130, AA502991, AW192419, AL267416, AL042667, AL042670, AL01479, AA525818, AL039257, AL049999, AA180056, AA669238, AL433952, AW439224, H86725, AW270468, AL434653, AL027067, AL065031, AL889345, AW084445, AL520984, AA664963, AL284543, AW148964, AL281622, AA526542, AL090377, AA831426, AL572680, H59429, AL003068, AA829044, AL476049, AL797998, AA570255, AL250552, AW3767624, AA714011, AL923052, AA525156, AL252005, AL254463, AW151247, R99253, AL921744, AA229012, AL4669155, AW069273, AA483735, AL254770, AL809300, AA572711, AL791659, AL251284, AL251034, AL251203, AA601712, AL457152, AC002306, AC005519, AP000008, AC004125, AC008044, AC002094, AL049694, AC004234, AP001054, AC004808, AB020865, AL022165, AL021453, AF129756, AC004019, AL133163, AC005175, AC004859, AC007488, AC005911, AC007421, AL049776, AC005089, AL049839, AC004263, AC004233, AC007050, AC004895, AB001523, AC005484, AC004257, AC005412, AC007277, AF111168, AC005585, AL031311, AC008372, AL030420, AC005696, AC007036, AL021808, AC007308, L44140, AP000553, AF001550, AL035587, AL139054, U95742, AL031673, AL049538, Z99714, AC002312, AC007229, AC006487, AC007216, AL109758, AC005821, AF207550, AL022322, AC005740, AL011930, AF10907, X69907, AC005921, AC003684, Z83843, AL080317, AL035416, AL121653, AC004858, AC006315, AC005346, AC002492, AP000704, AC006006, U85195, Z98051, AC006261, AC005365, AC005180, AL0060658, L78810, AC006509, AC007237, AC002527, AC0004112, AL031587, AC005932, Z85986, Z54073, AC004006, AL049829, AL031846, AL109628, AC006649, AP000248, AC004814, AC002039, AC004973, Z75744, AC004056, AC003957, AC005015, AC005624, Z99716, AC007371, AC005829, Z95114, AL034423, AC007688, Z83840, AC005183, AP000557, AC005253, D000591, AC005632, AC003007, AF196779, AL121595, AL031433, AC004994, AC005722, AC004084, AL031670, AC004801, AC005532, AL133246,</p>
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HTWAB27	7141	522796	1 - 353	15 - 367	AC003010.
HTWAB18	7142	522794	1 - 194	15 - 208	AA846935, AF196594, AA904211, AC005190, AC005531, AL022336, U91326, AC005320, AC008101, AC009516, AL022721, AC003612, AC008044, AL031848, D87675, Z99716, Z95114, AC002470, AC007308, Z97054, Z93023, L78833, Z82190, AC007057, AC000081, AC006120, AL031685, AC004259, AP000555, AP001056, AC005325, Z82244, AL031311, AL133448, AF165926, U96629, AL050318, AC005924, AC005484, AC003101, AC007214, AL049776, AC004600, AC002350, AC006544, AL080243, AC005280, AC006064, and AC005231.
HTWAA79	7144	869563	1 - 392	15 - 406	AC007766.
HTWAA42	7145	522603	1 - 140	15 - 154	
HTWAA32	7146	522797	1 - 426	15 - 440	
HTWAA31	7147	915276	1 - 332	15 - 346	
HTWAA22	7148	425133	1 - 442	15 - 456	AA643226, AL014703, AL969243, AW162494, AW162864, AA189060, AL859830, AW204291, AL948937, AL989446, AL954000, AL096112, D81407, AL675152, and AL022240.
HTWAA17	7149	667166	1 - 291	15 - 305	AL039089, AL912401, AA657752, AA641122, AW274078, AL049845, AA612727, N74479, AL187148, AL828275, AA602002, AA452887, AA581247, AL446336, AA158549, AA133851, AA630854, AA015740, AA595499, AL031595, AL132777, AC002425, Z98051, AP000509, AL049766, AC004895, AC009516, AC006512, U91326, AC005291, AL035071, AC000731, AL021939, AC005500, AL049780, AC005730, AP003626, AB023049, AC005484, AC005921, Z98304, AL096701, AF017104, AC006270, AP000702, AC005089, AL031257, AC002551, AF196969, AC006511, AC002465, AF053356, U47924, AC004448, AC020663, AC006530, AC004821, AC004491, AL049830, AF196972, AC005952, AB000852, AC005925, Z84480,

					AC004841, AF001549, AC002301, AC007536, AC006538, AC002394, AC005048, AC005324, US2112, AC007021, AP000356, AC005846, AC007298, Z95115, AL1080243, AC006576, AL1008710, AC006509, AL133353, AC004967, AC005399, AF069291, U80017, AC008372, AF069074, AL031846, AP000553, AL109627, AC004686, AP000350, AL049636, AL020498, AP000505, AC007308, AC004815, AL096773, AL031985, AC004033, AL121652, AC005180, AC002430, AC005015, AL020997, AC004890, AL023803, AC006312, AC003109, AC005088, AP0006241, AC003101, AC006388, AC003665, AL008708, AP000466, AP000557, AL090931, AC005839, AC004604, AL121603, AC007055, AL009181, AL022316, AC002375, Z93023, AC002111, AC007384, AC005821, AL133163, AC003107, AC004148, U95739, AF207530, AF129756, AC006026, AC004983, AC002996, AC003085, AD000092, AL049696, AC0049631, AC004902, AL078581, Z86090, AC004683, AC003042, AL023879, AC005837, AC000041, AL031291, Z82178, AC006557, AP001052, AC005332, AC007546, AC003029, AC007421, Z98950, AC005231, AC007192, AC006251, AC005722, AC005592, AL035587, AL022318, Z84476, AC012083, Z83840, M89651, AL121754, AC002128, AC005971, AC007226, AP000513, AC003304, AC005412, AC004882, AC005695, AF111168, AC005702, AC002326, AL132712, AC006285, AC002302, AC007193, AC005829, AC005037, AC005907, AP000349, AC006057, AC007225, AL031427, AL035086, AL031848, AL022319, Z83844, AC004167, AC004985, AC003663, AC004703, L35535, AC006211, AC006960, and AC005519.
					AL285483, AL348867, AL053496, AW268210, and AW303040.
HTUAAE10	7150	968597	1 - 400	15 - 414	
HTUAA93	7151	522950	1 - 351	15 - 365	
HTUAA79	7152	773978	1 - 369	15 - 383	
HTUAA63	7153	522080	1 - 249	15 - 263	
HTUAA59	7154	556958	1 - 347	15 - 361	
					AA487321, AT793001, R00245, AA377710, AL031176, AL096773, AC004009, AL109865, AL109622, AC002045, Z99756, AC004042, AC002492, U95626, AC000358, AC006926, L42096, AC000114, AL011930, AC012083, AC006080, AL109854, AC003677, AC005792, AP001068, AL109939, D42052, AP000475, AC007677, AC004685, AC003090, AC007253, and AL021407, AL117422.
					H96435, H96525, AL051562, AL032133, AP000150, D83253, and AP000009.
HTUAA55	7155	522805	1 - 347	15 - 361	
HTUAA51	7156	725949	1 - 303	15 - 317	
HTUAA45	7157	526606	1 - 359	15 - 373	

HTUAA42	7158	694535	1 - 101	15 - 115	AL049757, AC007283, AC005335, AC003108, AC007731, AC006017, AC005500, AC006965, AC007384, AL049776, AB023049, AL133163, AC005399, AL022320, AC004812, AC005823, AL121658, AC005280, AC005180, AC005914, AC005971, AC005736, AC006338, AP000553, AC002470, AL079295, AC005765, AC004841, AC013256, AL031728, AL009031, AC005740, AC004019, AJ003147, AP000557, AC020663, AP000350, U95742, AL121825, AC005620, AC004890, Z13025, AL121580, X71342, AL109984, AC006285, AC002301, AC004531, AC005081, AC005763, AC004477, AL008715, AC005513, AP000097, AC004975, AC002395, AL031662, AC006450, AC016025, AC004821, AC005325, AC007216, AF091512, U63721, AP000500, AC005808, AC006141, AC004447, AC006254, AP000556, AC007298, AC002544, AC005261, AL133448, AL035071, AC002477, A246003, AC006360, AC002029, AF121781, AC004837, AL109839, AP000201, AC005701, AP000493, AL035681, AL136295, AC009516, AC006241, AC004859, AC000353, AP000240, Z85987, AL132641, AC006057, U78833, Z95114, AL080317, AC004990, AL109758, AC005212, AL117337, AC004996, AC004382, AC007191, AL135744, AC003029, AC005295, AF207550, U89337, AL022326, AC004257, AL109967, U29953, AC003085, AC008984, AL034549, AC007917, AL035089, U91323, AC005670, AC006160, AF196969, AL079340, Z69917, AP000501, AC008055, AL035072, Z94721, AC005004, AC006064, AC005412, Z93016, AL023577, AL121653, AL022476, AC005939, AL096774, Z98051, AL035450, AC004814, AC006162, and U52112.
HTUAA42	7158	694535	1 - 101	15 - 115	AC005189.
HTUAA32	7159	522807	1 - 212	15 - 226	AC005601, and AC004782.
HTUAA25	7160	575308	1 - 476	15 - 490	H69008, AA458742, R02451, R00403, T99834, R02347, H86860, AA172191, AA845293, R89511, H67123, H73704, A1926681, A1860677, AA303055, R24915, AA457249, AA128700, AA176917, AA772016, R07395, AA604854, AA458498, AA828676, AA655015, AA53810, P27015, AA468425, AA055601, N64587, H72339, AA879053, AL040462, P02833, AA657835, AA640617, AL244254, AA613164, AL696550, A031037, AA379332, AA693484, AL287832, AW081815, H63806, AA865262, A1982634, AA323349, AA467963, AA743811, H53168, AA229464, AW274197, AA571327, N76053, A1572693, T81820, W69964, A1565245, AA293366, T07483, AA304977, AA331231, AW075132, A1590458, AL046746, A1590499, N30431, AF14108, AC007227, AL035413, AF084941, AL035587, AC005366, AC004623, AC005778, AC008033, AL008723, AC000335, Z83822, Z94721, AC000025, AC005527, AC005332, AC004202, AP000518, AB023054, Z98950, AC004087, AL035157, AL021707, AL049844, AL121603, AL096791, AC003669, AF196779, AF011920, AL022325, AL049761, U64564, AL031588, AC006077, AC007406, AC005089, AL049780, AP000553, AC009516, U64564, AC003025, AF139813, Z92542, AC005969, AC004228, AL022318, AC004929, AL031678, AC005901, AC005529, AC004408, U73023, AC007193, Z15026, AC004181, U95739, Y14768, AP000505, AC006965, AC004832, AC003082, AP000355, AF129756, AC006487, AC006091, U73331, AF061032, AC004651, AC004596, AC005300, AC002425, AC004638, AC006001,

HTUAA23	7161	575319	1 - 357	15 - 371	<p>AL031587, AL021808, AC005666, AC003035, AC004887, U02068, AC004496, AC005756, AC003041, AC004848, AC020663, AC004805, AL049869, AP000151, AC005390, AC005602, AL021918, AP000688, AP000501, AC003110, AC005091, AC004974, AL021877, AL033527, AB014077, AC004209, AC006139, AP000514, AC004263, AC004150, AL109627, AL030563, AC000385, AC007055, AL137434, L33485, AL000090, AC005796, AC004517, AL109963, AC004141, AC004522, AC006208, AC005839, AL049712, AL080243, Z80232, AL020995, AJ009610, U73024, AP001060, AL031296, AC006251, AC004659, AL031432, AL030424, AC008115, AC005822, AC006482, L44140, AC004168, AC006273, AL008726, AC004503, Z93020, AF007550, AC012099, AL121871, AF006752, AC005808, AC005072, AP00503, AC007544, AL031779, AC004552, AF134776, AC005235, L35681, AR060470, AC006111, U29953, AF037222, AC005568, AL031393, AL080242, AL000685, AC005067, AC004854, AP000210, AP000132, AL078381, AC006697, AC004893, AC006146, AC002546, AL021155, AL000092, AC005924, AC006539, AL030996, AC004918, AL034420, AL022101, AC004835, AC003085, AC002039, AC003663, AL049759, AC005914, AL021391, AC007314, AL049697, AP000248, AL049873, AL079342, AC004895, AC006050, AC007263, AL122023, AP000459, AC005874, AF134471, AC005010, AC005820, Y10196, AC005015, AL050307, AC006997, D88268, AC006926, AP000517, AP000010, AC003991, AC004543, Z84466, Z83844, and AL109847.</p> <p>AW105729, AA483223, AL609972, AL252176, AL254192, AA501791, AA383568, AA595656, AA557982, AL778972, AW150209, AA808982, AL267756, AL267450, TG3954, AL421950, AL419137, AL133243, AC004686, AC005971, AC005102, Z98742, AL133245, AL121603, AL035587, U95742, AC002430, AC008101, AL031311, AC005350, AC007216, AC004099, AL022322, AC007384, AC016830, AC016027, AL008730, AL008718, Z84469, AC009247, AC004771, AL009181, AL049749, AL049776, AL049569, AC005280, L78810, AL133448, AL035681, AC004834, AC005529, U91327, AL096701, AJ003147, AC007227, AC005387, AC006946, AC004630, AC005914, AC004895, AC005089, AC005527, AL022238, AP000349, AL021808, AC005512, AC004675, AC004531, AC004985, AC002416, AC005484, AL031774, AL031589, AC005911, AL049636, AP000537, AC005261, AF111169, AC003029, AC006468, AC004025, U63721, AC006071, AC005288, Y18000, AC007546, AL031282, AF038458, AP000420, AC006211, AC005553, AL021453, AL050308, AL022320, AC000076, AP000514, AL031276, AL022313, AF165926, AC005839, AC006312, AC005828, AC006006, AL080243, AC005488, AC002404, AC002059, AL096712, AC005736, AC005913, AC006162, AC005821, AC005088, AC004913, AC002310, AP000356, AB023049, AC004967, AF053356, AL035422, AF196969, AL139054, AC007263, AC002314, AC005212, AC002425, AC005778, AL022316, AC005921, AP000553, AC004626, AP000692, AL031228, AC007193, AC006057, AC004263, AF001550, AC005755, AL035443, AC002470, AC004922, AC006487, AC005231, AL022163, AF030876, U62292, Z85987, AL109801, Z93017, AC007030, AC004213, AC004408, U80017,</p>
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HTUAA21	7162	575312	1 - 362	15 - 376	<p>AW275432, AA428270, AW238137, AF191639, AA372958, C75012, T40342, H65404, AL031387, Z93930, AC0006367, L78833, AC002470, AP000088, AC005546, AF165926, U63217, AF096791, AL049694, AL024507, AL024498, AC007308, AL024474, U91321, AL022316, U73634, AP000030, AC007785, AP000042, AP000110, AC005081, Z95113, AC007537, AC004821, AC007546, AL080242, U47924, AC004816, AC006538, AL078581, AL023876, AC006044, AC005520, AC020663, L44140, AC004699, Z98941, AC004890, AL022476, AC006450, AF001552, AC004477, AF139813, AC006328, AC004851, U91322, AP000501, AC005082, AL133445, AC007934, AL122020, Z98048, AC005736, AL121652, AC004228, AC004130, AC005412, AC006441, AC003029, AL109758, AC005751, AC005332, AC004973, AC005821, Z97054, AC005089, AC005362, AC005335, AC003689, AC002070, L78810, AC008372, AP000704, AC004223, AL031274, AL049745, AL035086, AC006203, AP000152, Z84487, AC007066, AF196972, AC007207, AC006249, AF134726, AL031255, AP000555, AC005697, AL080243, M89651, AC0016025, AC006512, AC003025, AC005011, AC005295, AC004997, AF050666, AC004659, AL021155, AC002996, AL133163, AC006251, AP000215, AC007151, AC004752, AC005664, AL022238, AC002565, AC006211, AL139054, AC007685, AL020995, AE000661, U91318, AC006547, AC005514, AF001549, AL022320, AC004841, AC004067, AC005102, AC004263, AL009031, AC005585, AC004686, AC002326, AL035413, AC004983, AL049758, AL022171, U63721, AC002991, Z94056, Z97989, AC004084, AC005288, AC003108, AC006261, AL049697, AC005200, AF111168, AL023494, AC004125, AC003665, AC000075, AC005940, AL049757, AC005084, AF109907, AC005231, AC008126, AC002533, AC005839, AP000348, AC0015853, AC004832, AC005523, AC006285, AP000557, AC007731, AC004526, AF047825, AC000353, AC007540, AL031291, AC005067, AL022394, AC002350, AC005500, AC007279, AC005015, and AC003102.</p>
HTUAA11	7163	967919	1 - 161	15 - 175	





HTSFU94	7175	793056	1 - 443	15 - 457	AC002091, AF030876, AC003007, AC005399, U82668, AF118808, AC005703, AC004878, AC006116, AL022400, AC005360, AC007541, AC007748, AC005324, AC008018, AC005844, Z82195, AL023879, Z85987, AC006075, Z63710, AL078621, AC009464, AL008719, AC004383, AC004600, AL049776, AL022069, AF000501, AC005632, Z83841, AL034554, Z82208, AC002316, AC005932, U62317, AC006600, AC004765, AL049709, AC004016, AL0001517, AC003962, AC005778, AC005527, AL109984, AC004139, AF018080, AC004851, AC018769, AC007684, AL031447, AC003667, Z94056, AL117694, AP000014, AC015853, AC007792, AC005065, Z86064, Z98752, AC006581, AL049779, Z68870, AC008126, Z85986, Z98743, AC005274, Z74477, AL031587, AC005412, AL133238, AL049757, Z84474, AL035668, Z83840, AC007283, AL121578, AP000314, AC002070, AF111163, U82828, AC005529, AL035522, AC003030, AF134726, AC004449, AC006251, AL034553, AC004520, AC004966, AC005089, AJ229041, AF030453, Z84466, AL021546, AL109956, AC004895, AC007157, AC005028, AB023048, AC005041, AF124523, AL135744, AC005099, AC004196, Z83844, AL096774, AC002996, AC004741, AC003688, AC004217, AC002477, AL133246, AC007536, AL009172, AC007934, Z80901, AL021918, AL022165, AF165124, AC004228, AL109865, AJ003147, AC004150, Z82201, AP000502, AF020503, AL133245, AC006006, Z98950, AP000310, AF196972, AL031428, AL021808, AC007707, AC004584, U07561, AC007981, AL096794, AL096703, AC007114, AL132777, AL022316, AC005971, AL030308, and AL021807.
HTSF64	7176	747003	1 - 398	15 - 412	AW270091, AW293640, AL198447, W72558, AL291780, AA971480, AL134809, AL568769, AL052173, W70653, F25233, W94887, D45557, F35717, AF140690, and AF140691.
HTSEX79	7177	524280	1 - 239	15 - 253	HF0146, H45145, AW245497, AA310767, AA029983, AL042338, AW163308, AF070603, AF034373, AC005014, and AL137587. AL624551, AA829193, AL044271, AA483606, AA516193, AA570740, F00564, AL048275, N72170, AA568204, AL682899, AA730872, R95840, AA654874, AA206475, AL433104, AA484738, AA470567, AA502532, AW023111, AP15081, AA599069, AA515723, AA578627, AA516190, H53217, H60249, N32878, F13808, AW265735, H78898, H66577, AA584690, AA630122, N27751, W20344, AA084609, AA515733, AA706628, AH445460, AA338233, AA525830, AA601728, AA479751, F01666, F01532, AL569363, AW068580, AA714110, AL045476, F37292, AL587349, AL054339, AA001591, AA970967, AC002544, AC007242, Z84467, I34294, AC020663, AC006454, AL031003, AC005531, AC004526, AL020997, AC005280, AC002316, AC006445, AC006064, AF196969, Z99129, AC005318, AC009997, AC002477, AC006077, AC003663, AL031282, AC006285, AC002347, AC005015, AC002470, U82668, AC005529, Z95114, AF134726, Z98047, AL121769, Z93017, AC004991, AC003043, AC004186, AP000501, U91326, Z84496, AL135744, AP000114, AL031427, AL035398, AC007382, Z97353, AL009181, AC005082, AL109984, AP006889, AP006697, AC006449, AC005971, AC007011, AP000212, AP000134, AC009516, AC005726, AC004999, AL022316, Z95115, AC006111, AC004531, AL236701, AC003029, Z99754, AP000517, AP000553,

					AC007537, AC006312, AP000301, AC007050, AC005786, AL049872, AC007240, AC004652, AC005808, AC006317, Z84469, AL080242, AP000223, AC000003, Z98051, U62293, AP001552, AB016897, AL049795, AC004796, AL035659, AB023054, AL132712, AC005003, U031318, AC006121, Z69922, AC022517, AC006538, AP000343, AC004099, AC004230, U035357, AC002530, AC005004, AC004668, AC002430, AC005690, AC005484, AC006004, AL109623, Z93023, AC002350, AC006960, AP003626, U89335, AB014078, AC004382, AL031588, AP005053, AC007151, AC005288, AC005369, U47924, AC007546, AC004934, AL035495, AC007384, AC006512, AC005525, AC005696, AL078581, U07000, AP005055, AL121603, Y18000, AC005057, AC005829, AC006344, AC004622, AC005695, U80017, AL109865, AF196971, AL022718, AF039906, AC005237, AP000045, AC004129, AC007201, AC002306, AC004217, AC006965, AL031678, AL031681, AC007308, AC004448, AC005291, Z99716, AP001053, Z93930, M50688, AP000213, AC006101, AC007695, AL034594, D87675, AJ010770, AC004097, AL133353, AP000135, Z95531, AC004983, AL021155, AC005225, AC002558, AL022330, AF207550, AC005822, AL031587, AC004234, Z83826, AC004031, AP000104, AP001052, AC000025, U95739, AL031311, AP000347, AP000558, AL008730, AD000813, AL133245, AL049643, AL080243, AC005527, AL002239, AC005899, U91319, AC005006, AC004520, AC004491, Z98742, AP000563, AP000030, AP000031, AL133448, AC007051, AL121652, AC002996, AC004032, AC005399, AC005071, Z68321, AL109758, AL050318, AL021808, AC000085, AL031659, AC005257, AC005089, AC007919, AC004216, U95740, AC006487, AL022313, AC005005, AL035588, AC006468, AP000311, AC005412, AL117258, U57833, AC004812, AC004813, AC004084, AL008631, AC005632, AC005031, AC006251, AB023050, U22028, A47886, AC006211, AC008498, and AF001549.
					AI632021, AI522132, AI468255, AI473408, AI242842, R67081, and AI635775.
					AA295823, and H63678.
					R68381.
					T84775.
					AI284640, AI755214, AI754567, AI046409, AI963720, AI334443, AA602906, AW341903, AIW193265, AI270117, AW021917, AI590458, AI079645, AA491814, AW020088, AI962030, AI205052, AI244127, AI590499, AI613280, AI046457, AI350211, AI733856, AW023111, AI251284, AI251034, AI251203, AI284543, AW275432, AI254770, AI281881, AI874341, AA622801, AW406755, AI037683, AI284676, AI926728, AI431303, AI366555, AA525807, AA651632, AW237905, AI064918, AI925579, AI061313, AI354423, AW276289, AA704393, AI249853, AI609972, AW270385, AA502985, AI119649, AW276435, AA747571, AW328000, H07953, T74524, T36273, AI345681, AL044940, AA601376, AA515905, AL031295, AC007225, AP000692, AC004890, AL049694, AC002300, AL031120, AC006085, AL035405,

HTOIL36	7185	866492	1 - 1665	15 - 1679	<p>U91326, AC006211, AC002544, AC007226, AC005971, AL131163, AC007114, AC002316, Z93023, AL031283, AC005291, AL109952, D87675, AC006312, AC007298, AF200465, AC005907, AP000046, AP000114, AC000359, AP007664, AF030453, Z86004, AF196779, AL035659, AC002553, AL022394, Z93930, AC004913, AC002425, AL049576, AC005412, AF067844, AL022313, AP000133, AL049780, AC004150, AL031584, Z84469, AC005015, AP000355, AC004383, AF001552, AL121603, AP000098, AC003692, AC004813, AP005302, AL020997, AL031279, AC005088, AC007055, AC000134, AL135744, AC004531, AP000104, U63721, AC005200, Y14768, U95743, AL009181, AC003108, AL133448, AF111168, AL049697, Z95331, AC005013, Z85987, AC000025, U52112, AC005081, Z98884, X54176, AC002350, AC000041, Z98304, AJ003147, AC005324, AC002470, X54178, AC005525, AC005209, AC005006, AL023494, AC003101, Z98036, AP000359, AP000141, AC003553, AC005527, Z68277, AP000045, AP000113, AF077058, AP000505, AP000141, AC003571, AL132987, AL049776, AC002550, AC005756, Z83844, AC004167, AC004832, AL035071, AL132777, AC004084, AL096701, AC005183, AC004400, AC007382, AC006013, AC005399, Z82206, U57007, AC006057, AC004953, AL133238, X54181, AL021154, AC003982, AC005082, AL031389, AC004859, X53550, AC005921, AP000501, AC004526, AL031668, AC004686, Z83826, AC006241, AL024508, AL109627, AC005562, U07563, AC007685, Z95115, AC008018, AC003662, X55925, AC005837, AC005355, AF129756, AC005516, AC006088, AL001017, AC007652, AF060568, AC007567, AC005089, AL133245, AL031230, AL049843, AC002310, U95740, AF196971, AC004253, AL022323, AC005531, AC004883, AC002504, AC006252, U18391, AC005102, AC005325, Z83840, AC004601, AC007011, U95090, U18394, AL118516, AC007688, AC002347, AC006001, AP000563, AL022318, U57008, I51987, AL031681, AL034420, AC005058, AL021155, AC006581, U57009, AL132712, Z82214, AC005585, AC007938, X75335, AC004876, Z85996, AC005057, AL121652, AL109628, Z98200, AC004477, AC005180, AP000144, AC004757, AF196972, AL031311, AC002314, AF015147, L47234, AC006480, AL050308, U57005, Z99297, AP000211, AL133312, AC005049, AL139054, AC009516, AC005484, AL034429, AC004961, AL021394, AC005037, AL121769, AB003151, AL031282, AF031078, AC002302, AC006275, Z84466, AC007565, AC005620, AC005666, AL18393, AF030876, AC005255, AC000026, AC012384, AD001527, and X55926.</p> <p>AL044489, AL138265, AW069819, AW188427, AL120269, AA904211, AL679782, AL038990, AL053623, AL635325, AL951863, AW088224, AW131249, AL660136, AL040054, AF034176, AL457152, AL694178, AT764188, AT798521, AP24251, AL890779, AL028148, AW406447, AL963600, AS527961, AL640277, AL207476, AL158549, AA547979, AL801505, AL0442310, AL297145, AL204309, AL527965, AL157180, AL654588, AL040521, AW069227, AL445934, AW283331, AL046746, AL925321, AA489390, AA525174, AA515728, AL119123, AW243831, AL800168, AW162314, AA084401, AW275432, AP62030, N23504, AA804994, AA644090, AA126005, AA225406, AL800180, AL049630, AA814400, AL685198, AL366555, F25135.</p>
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HTOJF70	7186	457041	1 - 459	15 - 473	<p>             A1863202, AW069769, AW023111, AT791659, AV272294, AA618412, AW274349, AW327673, A1929825, AW021917, AW084445, A1929298, AA682912, AAS15351, A1114557, A1635028, AL079645, AL037927, A6035440, W338370, A1889426, A1368745, AA651639, A1832865, AA742815, A1890324, A0200873, Z83844, AC006211, AL035659, AC005031, U80017, AL119628, AC005089, AC000353, AC006480, AF053356, AC002310, AC004491, AL049569, AF196779, AC005520, AC005049, AC005081, AL133448, AF038458, AC007536, AL022238, AC004019, AC007686, AC007151, AF111169, AL034420, AC007201, AC005015, AC004983, AL021155, AL096701, AP000555, AC005102, AL031311, AC005412, AL050318, AC004813, AL080243, AC006285, AL034423, AC005488, AC005529, AC005071, AC006130, AL121653, AC004841, AC005484, AC009516, AC005488, AC005529, AC005071, AC006130, AL121653, AC005231, AC005037, AC016025, AC002059, U85195, AF045555, AC010205, AC007308, AC005971, AF000501, AL022320, L78810, AL022476, AC005480, AC006013, Z86090, AC005527, AC002549, AL022336, AC005385, AC002996, AP000557, U95743, AL022163, AC005839, AL023807, AL096791, AL050307, AL021707, AB000658, AC005722, AC005193, AC005531, AC006942, AC004832, AC007371, AC006277, U91321, AC004821, AC002350, AC006449, Z99716, AC007227, AC006530, Z85986, Z98036, Z97053, AC004084, AC006071, AL031680, AC007664, AC006014, AL035420, AC007676, AC006511, AC004796, Z95116, AP000359, AC008372, AL008582, AC007216, AC002477, AC004812, AC004678, AC000025, AC003101, AC006512, AL020997, AC007387, AC004477, AC002544, AC005696, AC004099, AC004890, AL009181, AC003070, AC005274, AC004967, AC006538, AC005778, AC004125, AC006001, AL109827, U95740, AF205388, Z97630, AL109758, AC006388, AL049839, AL024498, AC005736, AC005920, AC005261, AL034548, A1246003, U91326, AF000553, AC005899, AC007055, AC005694, AC004895, AC002347, AC005180, AC004887, AD000092, AC002395, AL035458, AC007565, AL035072, AC002551, AC005874, AF134471, AL034549, AP000211, AP000133, AC002301, AL031985, AC005011, AC006312, AL133355, AC005800, AC003108, AP001549, AL049776, AL035086, AC003043, AL133382, AL022721, AL0305071, AC005318, AL024507, AL117258, AC005086, AC007666, AC006121, AL109801, Z93017, AC009247, AC005823, AL021391, AC004675, AP000030, AC005399, AL121603, AC005209, AL022316, AC007193, AL080242, AC004253, AC005803, Z85987, AL049766, AP000134, AP000212, AC005006, AC004000, AC004560, AC002558, Y14768, AC007934, AC000648, AC002351, AL031295, AL008718, AC002492, AL109798, U62317, AP000117, AC007021, L44140, U95742, AC007546, AC006040, AC004834, AF001548, AC005088, U47924, AL035460, AL050348, AC006023, AL049872, AC005871, AF031078, Z84480, AC004383, AC003029, AP000045, AC006006, AC004921, AC006965, AC012627, AL009183, AC004447, AL031005, AC002126, AF030876, and Z98884.           </p>
					<p>             H48690, T80384, AA040129, F08300, AW371619, AW371614, AW371634, AW390107, Z93784, AF119662, and AL050282.           </p>

HTOIB05	7187	932423	1-455	15-469	N90622, and H56092.
HTOIZ49	7188	586144	1-399	15-413	
HTOIX57	7189	735004	1-327	15-341	T96088, T90652, and AC004143.
HTOIQ30	7190	594928	1-393	15-407	W87817
HTOITL74	7191	765840	1-553	15-567	W99957, AA525546, AA029444, W69750, AB023154, and AF086290.
HTOIK90	7192	557829	1-401	15-415	AL050305, and AL031007.
HTOIL84	7193	783312	1-486	15-500	H03759, and R72987.
HTOIH68	7194	753595	1-428	15-442	T48180.
HTOIH09	7195	901168	1-176	15-190	T20251, and AC005071.
HTOIH08	7196	959992	1-560	15-574	H42823, W39164, N41131, and AFI46689.
HTOIA89	7197	787088	1-479	15-493	H63865.
HTOIA82	7198	844319	1-401	15-415	H04212.
HTOIZ59	7199	869950	1-504	15-518	AA132611, AA225871, and AL035697.
HTOIX62	7200	573758	1-254	15-268	AA284052.
HTOIH93	7201	791459	1-427	15-441	AL41328, AW274848, AG638171, and AP92100.
HTOIR03	7202	924976	1-591	15-605	W91885, and T98558.
HTOIH89	7203	956264	1-415	15-429	
HTOHI14	7204	635980	1-486	15-500	AI19673, AA541120, AI793195, AI744281, and AL121754.
HTOHH78	7205	963216	1-2033	15-2047	AA143556, AA146625, AI284640, AL046409, AI613280, F56273, AI281881, AW193265, AL160159, AP63720, AI431303, AT276827, AI350211, AW270102, AW419262, AL048925, AW301396, AW274349, AI334443, AW301350, AA491814, AI619997, AI085719, AW021583, AA610491, AA2828704, AA513141, AW260009, AI749478, AA581903, AI119691, AI499503, AL688846, AI471481, AW406447, AW265007, AW073470, AW029038, AA669642, AW193432, AW61334, AA843450, AA613345, AI053672, AW338086, AW162049, AI929531, AI7546658, AW406162, AL103376, AI679782, AP62050, W79504, AW072923, AI044940, AI434706, AI305547, AI355206, AI168185, AI865905, W089322, AI339850, AI110770, AW406755, AL046898, AA158934, AI570261, AI685198, AW088616, AA493708, AW169136, AI590689, AW062489, AI752186, AI246796, AI754955, AL048626, AI367497, AL063390, AI382929, AA521323, AI049722, AI358343, AI653886, AI871722, AI860020, AW166815, AL038785, AW808058, AA598586, AI571512, AI138455, AA679124, AI674873, AI918421, AI282310, AI366988, AA601253, AW022379, AA126051, AA126035, D82290, AW168342, AL049130, AI2551002, AI120687, AD91476, AA307824, UI8398, AC004963, AF077058, D83989, X73523, AF015152, AF015151, X54175, X54178, W57009, X54181, AF015156, U57005, U57007, X55925, UI8394, UI8391, UI8392, U57006, U57008, X53550, UI8393, AF015157, X54180, UI5997, UI8390, UI8396, M87919, X55931, UI57004, X54176.

HTOHG68	7206	964961	1 - 465	15 - 479	<p>U02532, AF015160, AC005529, AF015167, AF015148, AF015149, AL031346, A39972, S75201, M87916, AF015155, AL023882, AC005815, AC006292, U12380, X88791, U67233, AC006206, AC005250, AC006012, AL050348, AC007390, AC000025, AC005052, AC005527, AR042836, AL121653, AL050097, AC005696, AF190465, AC000092, S43650, Z49816, AC004582, AC004386, AC007792, AC003664, AL121591, AF023460, AL031293, AP000552, Z13970, AC006128, AC004470, AC003103, AC005412, AL110292, U67827, Z69666, AC005737, AC000035, AC002564, AC004940, U02531, AC033527, AP000047, AL133399, AC004941, LS1648, AF147439, AL096767, AC003119, AC005484, Z71988, S75537, AF010238, AC007695, AF015170, AC004040, AL050347, M87917, AF078904, S70707, AC006277, AC007358, AC004650, AC007666, U67222, AC004931, U72787, AC009946, AF000557, AC0010598, AC004755, AL022320, AC009516, AC002298, AL096861, AC002429, AC008168, AB020859, AP001116, AL035089, AC006071, AL117256, AL008728, AL121603, D69999, AL049557, AC004662, AC006512, AC005368, AL031685, AC006077, AL031670, AL080243, AC005531, AC0040987, AC007298, AC002364, Z84490, U11309, AC005913, AC007043, AC005603, AL034344, AC006251, AC004148, AC004016, AF039907, AC004019, AC005563, U95740, AL020993, AC004638, AL021453, AC008115, AL096771, AC007682, Z68881, AC006273, AC007228, AL049875, AF001549, AC004622, AC007099, AL031391, AC003045, AF020503, AL049767, AL049562, AC007114, U67225, AC000066, AC000118, AL109853, AL078644, AC004626, Z82210, AL009179, S77605, AC004449, AL078593, AC006213, AC000355, AC002543, Z66917, AL096776, AC003009, AC005740, AC010168, AC009479, AF184110, AC004534, AL023575, AC004099, AC005775, U49740, S70694, and AL049795.</p> <p>AA757866, AF000109, AW419262, AL118991, AL431303, AL120086, AA493136, AW022608, AA588001, AW263415, AL537772, AA081462, AA515334, AL369380, AA908687, AA568869, NS4894, AL963221, AA618452, W01230, N49368, AH457397, AW275971, AA497023, AL119713, AL309389, AL045813, AA613249, N35306, AL499588, AA524821, AL523316, AL285753, AL046549, AL924948, P05324, AL962874, AA550797, AA504877, AV000491, AL609464, AL042756, AA533333, H50970, AL925579, AL028498, AL733856, AC007666, AC004019, AP000306, U95740, AP000047, AC004594, AP000115, AC005353, AL031390, AC000052, AC005912, AC005625, AC004945, AL050323, AL031224, AL035072, AC004913, AC007225, AL135922, AL024497, AC005670, AL031311, AC004263, AC005789, AL034394, Z94721, U62317, AC007131, AC005736, AC002470, AC005406, AC005839, AC005041, AC007559, AC008040, AC005661, AL049798, AL117344, AC005191, AC004149, AC004227, AB020873, AC004889, AP000074, AL136295, AC004000, L78810, AL008718, U65406, AC005209, AL031680, AC007008, AC004596, AP001116, Z82201, AL031666, AC007377, AC005279, AC007685, X78901, AC004996, AC005228, AC004933, AL021528, AC006006, AC005988, AC007637, AC004782, AC006369, AC005908, AL096701, AL109827, AC005203, AL049540,</p>
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HTOGU88	7207	558488	1 - 346	15 - 360	AI417120, AA483778, AA738129, AB367757, AI248999, AA358028, AA287676, AA479947, AA738144, AI540846, AA252123, AA227893, AA503839, AI468785, AA354625, AA282788, T89256, AA257010, AA490481, AI572545, AA188716, AI870449, AC008394, Z93022, AC003084, AL034399, AC004539, AC002349, AL020992, AC007567, X81002, AL033403, AL121694, AC007786, AC004485, AC005161, AC005297, AC005191, Z95118, AC003109, AL049563, AL022771, AC007857, AC004775, AF047668, AL035258, AF000496, AC009248, Z99571, Z68332, AL109659, AF029308, AC005189, AC004535, AL050401, AB020876, AF002397, Z92844, AC006287, AC005908, AC004026, AL117375, AC005064, AL078600, AL133277, AL080312, AC003098, AF172277, AB017651, AC005588, AC004070, Z82211, AL049641, AL022310, AC007447, AC002085, AC002038, AC002383, AC006070, AF198097, AL049734, AC005692, AC005050, AC008064, AC005076, Z81008, AL109807, AL079305, AP000545, AL121782, Z70233, AC007204, AC007655, Z70226, AC007254, AL096862, AC003687, AL031776, Z70233, AC007204, AC007655, Z70226, AC007254, AL096862, AC007628, AC002468, AL079334, AC005062, Z94721, AL034428, and AC005922.
HTOGU78	7208	529798	1 - 195	15 - 209	
HTOGU77	7209	523533	1 - 119	15 - 133	
HTOGC91	7210	790438	1 - 548	15 - 562	H06214.
HTOPV57	7211	529614	1 - 171	15 - 185	
HTOPV08	7212	960203	1 - 178	15 - 192	
HTOFU55	7213	732454	1 - 425	15 - 439	W90433.
HTOFU20	7214	527938	1 - 47	15 - 61	
HTOF574	7215	765918	1 - 161	15 - 175	T64509.

HTOFO18	7216	911756	1 - 2163	15 - 2177
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HTOFC06	7217	960546	1 - 270	15 - 284	AL766308.
HTOEX28	7218	936543	1 - 341	15 - 355	W67985, AL806720, AL819360, AA219394, AT743193, R72848, AW117312, H42783, AA889684, AA352279, AP952783, AL818791, AA099553, AW409898, AA282827, AA775865, AW409899, AB033018, and AF161391.
					AA258041, AA290938, and AA304566.
HTOEY91	7219	509938	1 - 460	15 - 474	
HTOET61	7220	742164	1 - 445	15 - 459	
HTOEE28	7221	685375	1 - 312	15 - 326	
HTODN408	7222	960113	1 - 388	15 - 402	N56666, and AL460076.
HTODL10	7223	968395	1 - 407	15 - 421	AA143085, and AB02327.
HTODD59	7224	738532	1 - 388	15 - 402	R81985.
HTODA31	7225	698400	1 - 454	15 - 468	AA236974, AA235912, and AB017915.
HTOCK85	7226	521944	1 - 339	15 - 353	AL043144, R96621, AA367672, W381823, AA904211, AL271762, AL567391, AA225100, AW103251, AA297011, H07953, AA102737, AA554659, F13749, AA715284, AA715344, AA715527, F17700, AL246061, T47124, AA084609, AL251241, AA279919, AL123207, AA804694, AL110670, AL349130, AA568204, AA570740, AA715338, AA483606, AA354141, AA721523, AL669185, AA302661, AL231944, AA019939, AA809807, AA420249, H54792, AA827904, H68343, AL869579, AA326904, AL620415, AA583386, AA444166, AA837715, AA584765, T52772, AL446336, F01666, AL039930, AL1310787, T54783, F35902, AA598605, AA878407, AL306717, AL904944, AA719845, AA640776, AA056248, AA835889, AA078509, T70299, AA091982, N54397, AA804334, AA728911, AL613389, AA658934, AT791185, N92039, AA302982, AA577824, H62550, AW404225, AW051819, AA381762, AA658477, AL217131, AA604831, F03672, AA633565, AL135643, AW023111, AA493947, AA297664, AL821823, AA525331, AA551268, AA708753, AA975894, T40629, AL821921, AL926909, AL821076, AL184061, T50676, AW163763, AA665532, AA557982, AL683426, H86221, AL925462, AL054090, AA744048, AA092862, AW264901, H79586, AP000045, AL022318, AC007216, AC005529, AF196969, AC005332, AL136295, AC007066, U95742, AC002350, AC005527, AC005488, AP000300, Y18000, AC007308, AF000030, AC005015, AP000501, AF207550, AC005231,

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HTOCC73	7227	870004	1 - 378	15 - 392	
HTOCC14	7228	529958	1 - 286	15 - 300	
HTOCC03	7229	925368	1 - 111	15 - 125	
HTOCA55	7230	732469	1 - 384	15 - 398	293784.
HTOBB60	7231	742315	1 - 457	15 - 471	T98484.
HTOBB63	7232	530283	1 - 176	15 - 190	
HTOBC26	7233	870011	1 - 245	15 - 259	
HTOBA33	7234	965151	1 - 606	15 - 620	

HTOAT88	7235	530183	1 - 398	15 - 412	AA628575, A1184931, N56035, A1097606, A1273604, AA886333, AA678824, A1553928, AA769706, A422919, A1217459, A1168272, A1190885, H18297, A1190987, A1422738, A1223215, AA854070, H179768, D59304, A1086281, AA062812, A1142579, and A1034553.
HTOAT81	7236	530185	1 - 217	15 - 231	T90102.
HTOAT68	7237	530187	1 - 304	15 - 318	
HTOAT66	7238	530188	1 - 344	15 - 358	
HTOAT63	7239	523754	1 - 365	15 - 379	
HTOAT57	7240	870017	1 - 114	15 - 128	
HTOAT50	7241	723595	1 - 335	15 - 349	
HTOAT43	7242	529840	1 - 122	15 - 136	
HTOAT35	7243	521914	1 - 204	15 - 218	
HTOAT28	7244	530191	1 - 403	15 - 417	
HTOAT27	7245	682115	1 - 386	15 - 400	AC004928.
HTOAT06	7246	960581	1 - 227	15 - 241	AW006283, AA481083, and AA334330.
HTOAO63	7247	745545	1 - 653	15 - 667	T84893, and AC007681.
HTOAO01	7248	921744	1 - 351	15 - 365	H00926.
HTOAM08	7249	960122	1 - 292	15 - 306	AA412441.
HTOAL84	7250	783261	1 - 107	15 - 121	H63922, A1080109, and AA410506.
HTOAK39	7251	709579	1 - 479	15 - 493	T73359, and AC005776.
HTOAL51	7252	529553	1 - 275	15 - 289	Z83848.
HTOAL25	7253	529556	1 - 347	15 - 361	
HTOAL15	7254	529557	1 - 293	15 - 307	AL031259, and AL132641.
HTOAA05	7255	932732	1 - 364	15 - 378	AA120896.
HTOAA73	7256	764707	1 - 430	15 - 444	T91665, and D44743.
HTJNX95	7257	795376	1 - 494	15 - 508	R17461, and AAG14012.
HTJNT65	7258	771995	1 - 597	15 - 611	AA031753, A1953410, A1273879, AA486535, A1970601, A1804913, N71976, AA252687, AW022153, T95753, A1189228, D58604, R06245, AA470886, AA620519, A1374732, C16129, AA737971, AA043942, H02570, A159851, A1423638, H52318, A1858710, AA503361, A1420860, A1135778, AL037668, AW151753, A1346020, A1051129, A1W440638, A1768841, A4450210, A4399154, AA610484, AA758319, A1865664, AA528037, A1914093, AA975822, AA045559, AA551664, AW002772, A1228996, A1261994, A1431974, A1003695, AW264165, AA971504, A1864825, A1419538, A1422333, A1W237522, A1590661, A1346915, A1W073186, A1952777, A1424070, R76870, A1094960, AA039924, A1983928, A1337380, A1135734, AA366382, A1687114, R99970, AW024883, AA481014, A1719088, R23164, A1758843, R91051, D20914, R76869, H03271, AR025395, AR025400, AR025410, AR025393, AB011145, AR025403,

HTJNF11	7259	960217	1 - 786	15 - 800	AR025409, AR025399, AR025414, AR025398, AR025415, and AR025406.
HTJMJ289	7260	973076	1 - 372	15 - 386	AA746300, and AC006274.
HTJMU86	7261	870312	1 - 594	15 - 608	AA279274.
HTJMQ90	7262	974496	1 - 210	15 - 224	AF128525.
HTJML71	7263	759890	1 - 457	15 - 471	AA250886, and AC003042.
HTJMF56	7264	733444	1 - 469	15 - 483	N33555, AH007162, and H96299.
HTJAE78	7265	773609	1 - 390	15 - 404	AL022237.
HTJAD50	7266	724438	1 - 307	15 - 321	R06826, and W60035.
HTHDS68	7267	753137	1 - 338	15 - 352	H78116, R96198, AA826048, AW161016, AB37065, AA593462, AL635819, AA482794, AW023511, AL002966, AA330592, AL1610607, AL117354, AC007327, AF067844, AC004901, AL049869, AL049776, AC004000, AL034423, AC005288, U81833, AC002350, L78810, AL109627, AC002470, AC002312, AC002364, AC005808, AL022578, AL109801, AL021807, and AC005251.
HTHDC27	7268	578830	1 - 654	15 - 668	HS8694, and AA676340.
HTHDC05	7269	932174	1 - 289	15 - 303	AI500356.
HTHDM10	7270	964906	1 - 399	15 - 413	
HTHDL30	7271	578894	1 - 416	15 - 430	
HTHDL93	7272	792443	1 - 540	15 - 554	AA460795, AA460376, AA779701, and AA460360.
HTHDF13	7273	490673	1 - 604	15 - 618	
HTHDE83	7274	516372	1 - 400	15 - 414	
HTHDC07	7275	953604	1 - 521	15 - 535	AA535817.
HTHCV69	7276	973309	1 - 329	15 - 343	AA523829, AA662017, AA652348, AL270360, AC005822, AL049635, AF053356, AL049636, AC007314, and AC007221.
HTHCU42	7277	578861	1 - 346	15 - 360	T06598, AW004536, AA643451, AL521525, AA643441, AL926102, AL537368, AW020150, AA877992, AA302979, AA995189, AL061468, R82650, H59173, AC005037, AC006285, AC005871, AL122023, AC007686, AC004003, AL031255, AC005288, AC002477, AF117829, AL049694, Z94044, AL121638, AC005531, AL022240, AL109798, AC006482, AC009248, AC002350, L78810, AC005829, AC002095, AC005747, AC004963, AC007226, AC005067, AC006075, AL022320, AL049872, Z86690, AF134726, AC006312, U63721, AC005666, AC006006, U47924, AC004560, AL031311, AL031680, AL133163, AC002367, AF196779, AC006480, AL109758, AC004975, AF111168, AL080243, AL122020, AC005048, AL121603, AC006318, AP000305, AC002492, AL049869, AP000510, AC005922, AP000047, AC007546, Z69890, and AP001053.
HTHC072	7278	578758	1 - 374	15 - 388	AL049835.
HTHC045	7279	722029	1 - 147	15 - 161	

HTHCK89	7280	694051	1 - 604	15 - 618	
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HTHCG74	7281	578839	1 - 103	15 - 117	Z43611, H64102, T35364, T29948, Z43604, and F07345.
HTHBV73	7282	946168	1 - 347	15 - 361	
HTHBV81	7283	519640	1 - 445	15 - 459	
HTHBV64	7284	746935	1 - 555	15 - 569	H03259.
HTHBV25	7285	961627	1 - 541	15 - 555	
HTHBV36	7286	458387	1 - 304	15 - 318	H17221, H24439, R24985, R72995, AA447349, and AA984682.
HTHBV85	7287	790305	1 - 471	15 - 485	H03259, H17221, H24439, R24985, R72995, AA447349, and AA984682.
HTHBV60	7288	739707	1 - 397	15 - 411	T69517, AP000274, and AP000104.
HTHBK64	7289	573926	1 - 311	15 - 325	AF156557, AP007493, AL109665, AL109664, AF156561, AF156558, and AF156559.
					AA233203, AA233119, AC004214, AB000880, AP000507, and AB000882.
					AW188742, A1049955, A1267884, AW021116, AL431513, AL917132, H71678, AA578621, AP84168, AA502532, R64617, AL47603, H29914, AW245354, AL301373, AL446259, W01359, AL915081, F31811, AW162750, AA654482, AL912401, AA988600, AW023111, AA971196, N68472, AW156980, P24745, A1734837, N72717, AL9161983, AL417469, AA558404, AA187731, AA593257, M87889, AL049759, AC002492, AC006965, AC002302, AC008101, AL031283, AL035405, AF047825, AL035659, AL035071, Z95115, AL008715, AL049869, Z98950, AL049697, Z82206, Z83838, AC005086, AC008134, AC005480, Z93241, AF196972, Z95116, AC006312, AL133245, AC005755, AC004531, AL022336, AL022313, AC007576, AC006480, AL139054, AC004966, AL096791, AL049760, AL049834, AC007055, AP000248, AL022320, AC002551, AP000689, AL031848, AP000252, AP000557, AC002314, AC007688, D87011, AB016195, AC005207, AC002404, AC005231, AP000502, AL031311, AC008033, AC002477, AC008040, Z68273, AC005529, AC004216, AC006501, AC002365, AP000212, AP000134, AC002504, AL049780, Z83844, AC005544, Z84469, AC004854, AD000671, Z97630, AP007308, AC005102, AC004217, U95741, Z98884, AL133448, L78833, AC004883, AC003070, AP000096, U10087, AC005821, AP000036, AC004955, AC002565, AC007011, AF031078, AP000100, Z94162, AF088219, AC006509, AL109865, D87675, AL049766, AC002984, AF030876, AL031594, AL031602, AC004859, AC004967, AL031281, AC005049, AC004849, AC005476, AL049569, AL049873, AC005274, AC007292, U85195, AB003151, AC000353, AC005089, AC004143, AC009247, Z84487, Z99128, AP001549, AL121658, AC002312, AC006088, AL022323, AC004876, AC007842, AC004656, AL022165, AC005880, AP000098, AC005300, AC003962, AF165926, AC002425, AC006117, AC005484, AC009721, AC008009, Z95114.

HTHBK47	7290	526705	1 - 298	15 - 312	AC004832, AL050308, AC000024, AL035588, AC005520, AL031803, AF187320, AP000692, AC007263, U80017, AL137592, AC004125, AP001053, AE000658, AC006211, AC004644, AC006382, AL024474, AC005399, AL031627, AP000501, AC005924, Z98749, AL121603, AC002544, AC005722, AC005193, AC016027, AC006012, AC004900, AC006023, AC0016830, AP000103, AP000695, AL031133, AC007685, Z93244, AF196970, AL022302, AF030453, AC006368, AC000035, AL009181, AC005972, AL117344, AC004448, Z97183, AF111167, AL022163, AP000347, AC004383, AL021707, AB023051, AF001548, AC003982, Z93017, AL008735, AF146347, AC002369, AC005255, AC005280, AC008072, AL024507, AC002456, AF111168, AC011331, AC004605, AC007684, AC006125, AC005081, Z83826, AL229041, AC006071, AC005288, AC004760, AC009516, AL031230, AC005028, AC005409, AC006449, AP000504, AC005363, AF134726, AC004991, AC005391, AC004000, AC004875, AC006111, and AC004815.
HTHBK04	7291	925600	1 - 134	15 - 148	AA085410, AH17464, AA857673, AL27373, AL439816, AL278440, AA490602, AA480162, AL119411, AA663472, AL020992, AA657835, AA772016, AA743811, AA719208, AL051037, H79308, AA992126, AL121910, AW157005, AA865262, AL025510, AV019964, AL547110, AW328446, AL332615, AA808036, AA610313, AA079076, AL860535, AA223312, T47324, AA525423, AA857296, AL435639, AL119284, AA701119, H51538, AW105714, N94134, AA507837, AL119483, AL181805, AA442528, AA196390, W07101, AC005578, AC007263, AL133448, L78833, AC004813, AC005215, AC004517, AL022315, AC003306, AC005484, AC006449, AL031659, AD000864, AC005175, AC004476, AC003007, Z98048, AC005057, AL109984, AC007686, AC005624, AC004384, AL021546, AL022316, M89651, AC005982, AC004963, AC006050, AC005356, AC005520, AC007546, U62293, Z82189, AC004905, AC005632, AC000134, AC007707, Z83846, AC004408, AC006251, AC007421, AC004000, AL008582, AC005089, AL022326, AC005668, AC004491, AL096763, Z97054, AC005765, AC005837, AL009181, AL022318, AC004991, Z83844, AC002126, AC005411, AC005652, AC002977, U95090, AL020997, Z83826, AC006006, AC005280, AC005480, AC005722, AC006480, AC006509, AC005225, AC002395, AC005239, AC005088, AL023494, AL022476, AC007227, AC007151, AC005488, AC009516, AC004859, AC005094, AC003010, Z98742, AL080243, L34079, AC004953, AC002492, AL096701, AF207350, AL031591, AC005394, U63721, AP000121, AC004752, AF047825, AL023807, U07561, AC006120, U95742, AP000689, AC004686, AC006211, AL022329, AC004526, AC006552, AC007283, AF053356, AD000090, AC000353, AC002394, Z84469, AL135744, AL049780, AC007685, Z83843, AP000043, AP000111, AC005291, AC007055, AL031255, U07000, U91323, AC006146, AC005071, AL023553, AC003026, Z93017, AL122020, AL021391, AL050325, Z49258, AC007686, AL049869, AL109627, AP000116, AP000053, AP000168, Z93241, AF205588, AC002551, AC005252, AB003151, AL117339, AC002316, and Z98304.

HTHBH32	7292	699557	1 - 577	15 - 591	W05248, AW137945, N75450, A1758397, AA877636, AA514763, and AW195051.
HTHBG23	7293	410319	1 - 331	15 - 345	AA423943, and AF180425.
HTHBC07	7294	954440	1 - 311	15 - 325	AA383906, AA383905, and A1143579.
HTHBC04	7295	933029	1 - 277	15 - 291	AL048409, AL048408, AA383902, and AA515799.
HTHAA24	7296	575493	1 - 502	15 - 516	AA383837, AA383781, AA767276, AA214296, AA679520, F18098, AA743374, T86730, AW193880, AA136098, AA371011, AL031685, AC004099, AC005219, AL118509, AC005874, AF134471, AL096791, AC004834, Z95152, AC005620, L47234, AL079342, AL008712, AC008044, U52112, AC004762, AL009182, AC005011, AC005899, AC004968, AC006328, AC007450, AC005086, AC003689, AC003043, AC004801, AC003037, AL049709, AC004984, AC002527, AL023807, AF001549, Z94801, Z98304, AL009174, and U93037.
HTGG027	7297	682376	1 - 432	15 - 446	R73588, AL565226, and AF075029.
HTGGN71	7298	1760059	1 - 507	15 - 521	R96968, and AL022722.
HTGGN51	7299	870386	1 - 226	15 - 240	AA595801.
HTGPFY5	7300	731360	1 - 127	15 - 141	
HTGPFY05	7301	928205	1 - 152	15 - 166	A1751212, T11828, A270451, AA642445, AA161086, AA569471, A1821379, AA484658, AA630854, AA744400, AC007226, AL050318, AC005484, AC005320, AC004876, U73167, U90084, AC004020, AC004997, AB023052, AC004639, AC005920, AC005383, AC006538, AC009247, AL031311, AC004914, AL031662, AC003937, AL049540, U73640, AC003104, AL022302, AL008723, AC005523, AP000351, AC004130, Z85987, AC000391, AC005874, AF134471, AL139054, AC006077, Z84718, AC002323, Z97988, AC005932, AC005756, AP000513, AP000008, AL031597, AP000215, AL022163, AC005317, AB023048, U80017, AL109552, Z47066, AF200465, AP000704, AL031846, AP000511, AL031283, AL078584, AC005088, AL035415, AL109758, AL078463, AC002559, AC004148, AC005193, AL049839, AC007242, AF117829, U62293, AL033403, Z95115, AL024498, AC006060, AC003009, AC002073, AC005919, AC005666, AC005712, AC002059, AL035450, M17662, AF069291, AC006536, AC006296, Z85996, AC000066, AF067844, AC000379, AL133355, AC004991, AC005844, AL031848, AC002367, U63721, AC005057, AC004655, AC000025, AC004237, AL031666, AL022323, AL010770, AP000359, AL022324, AC005899, X74558, AL049548, AC004331, AC004930, AL050348, AC003688, AL109827, AF196969, AC004895, AC002157, AL031659, AC007686, AP000251, AC002312, AC001432, AL109853, Z93023, L77570, AC004891, AC006441, AC005487, AC007324, AC002039, AC008101, AC005258, AC006571, AC005081, AL078581, AF001550, AF196779, U95740, AC006480, AL049776, AC007011, AL035086, AC004098, AC018633, AC008079, AC002449, AL133448, AC004167, AL049743, AC004687, AC011362, AC004253, AC004491, AC003965, AC000045, AF111167, AC005527, AC006047, AP001058, AF000348, AL133246, AC000353, AC005207, AP000030, AC004856, AC005914, and AL109798.
HTGPFK70	7302	756534	1 - 476	15 - 490	AA1195709, and AL1381482.



HTGEY89	7303	786057	1 - 434	15 - 448	AC005076.
HTGEY40	7304	711177	1 - 420	15 - 434	AA252452, AA465260, AI368114, AI803768, and AA678077.
HTGEX10	7305	963862	1 - 1003	15 - 1017	T40848, W38648, AW103981, AA359366, AA338431, W21392, AA669416, AI364570, H96580, AA323343, T77560, H64482, W40246, AA458804, N91572, N69399, AA665021, AA364224, AI868192, AA411659, Z22622, N35250, AI561255, AI357477, AA747480, AA374705, AW440810, AW439480, AA558716, W94226, AW192297, AI560119, AI037550, W92961, AI061292, AI061134, AA357307, AI572581, AI339182, AI241372, AA876128, AA558402, R76765, AA33450, AI572564, AW316542, AI011901, AI754195, AW328174, AI246796, AA365144, AW333634, AW410086, AI818495, AW339111, AW439646, AI826716, AI978981, AA653975, AI728973, C15093, AA488746, AI273185, AA508509, FI2535, AI910609, AI915293, AP000008, AC002553, AC005771, AC005783, L41140, AC009721, AI022476, AI081577, AC004955, AC005532, AC006376, AC004659, X74962, AI035455, AC004841, U62317, AC005043, AI121576, AP000431, AP000210, AP000132, AC005772, AI109984, AC004000, AC006924, AF196969, AC005919, AP000067, AC005229, AC009509, AC005519, AC005225, AP000345, AI022284, AC004134, AI096791, AC007695, AC006501, AC001050, AC008040, AC006040, AC005520, AI096701, AF042835, AP000350, AC007052, AC005911, AC004083, AI050310, AC005015, AP000248, AC004020, Z83840, AI022316, AI239325, AI031276, Z97832, U73479, AB020869, AC002470, AI031289, AC002430, AC004686, AI035415, AI031594, AI049776, AC005484, AC007384, Z88504, AC003950, AC005231, AC002565, AC008015, AC005081, AC004504, AC006367, AC003508, AP000501, AC004799, AC006965, AI121934, AC005320, AC012627, AC007666, AI096678, AC002996, AC002395, AI034421, AI035683, AI031283, AC005678, AC006273, Z85987, U15422, AC006071, AC005391, AI009175, AI022329, L48038, AC000026, AC002559, AC005007, AF146367, AI009031, AC002326, U19759, Z84480, AI034417, AF017104, AC002350, AF117829, Z86090, AC007226, AC004966, AC006312, AF001550, AF108083, AC004033, U95740, AI031665, AC005253, AC005531, AI007398, AI035587, M27132, AI049766, AC002059, AC005280, AP000227, AI035638, AI024498, AC005057, AI133382, AC005899, AC008127, AC005288, AI080243, Z86061, AI006996, AI035447, AC007030, Z88048, AP000557, AF124523, AC006011, AC005005, AC006088, Z98745, U07562, AC005620, AC004693, AI121603, AI035668, AI031848, AI031657, AB026898, U78027, AC005332, AC006141, Z82171, AC004685, AI133241, AC007542, AI031282, AC006948, AF118808, AF165142, AC004626, AI135747, AC006116, AC007388, AC005104, AI035422, AC003007, AI121754, AC004381, AC002418, AI121894, AI022165, AI023283, Z99716, AC007193, AC005786, AC006026, AF069291, AC007878, AF190465, AC004531, AI035420, AC005304, AC008038, AC005684, AC004834, AI080271, AC008498, U62293, AC004953, AF118086, AP000100, AC006285, AC004814, AC005387, AI132716, AC006001, AC005971, AC007688, AI049843, AI034379, AC004884,

HTGEL48	7307	721660	1 - 434	15 - 448	and T39860
					<p> T94971, T95021, AA501450, AA083328, AI904944, H86416, AA493789, AI817230, AI241637, N68449, AI264579, AI446127, R49266, AA747337, AA972523, H63953, AW151870, W61253, N73203, ZW6972, AI018726, AA506744, AI188049, AA078509, AA632565, AA683091, AA350406, AA215585, AA774098, AA047849, AI679221, N47855, AW327852, AA806089, N52323, N33851, AA302557, W76645, AA713779, AA133013, AI733856, AA342166, AA827080, AI254781, AA558404, AA525332, AW019995, AW069227, H57324, AW086117, D53046, AA484651, AI025930, AA837325, AI634187, AI207582, AA614647, AI457313, AI933111, N83628, N59744, AI472973, T62955, AA459250, AA371410, AI251144, AI492780, AI805053, D51877, AA317144, AI821342, C14966, AA225548, T65972, AA384911, AI669589, D51927, F17537, AA854782, F34465, AI184894, T06876, D56450, AA551030, AA351893, AI598605, AI85465, AA583579, AA811150, AA862312, R81453, AI969106, AI904594, AI828803, C14627, N70449, AI368862, AA484022, C15184, F33126, C15504, AI904586, AA513189, AI283938, F27229, C14796, AI039761, AA226357, AA468921, AA226356, AA708263, AI859744, AA525177, AI872229, AA434078, AA583568, AA719316, AI889426, AI138299, AA468997, AW081894, AC004001, AI031577, AP000303, AP000046, AP001114, AI080106, AC007041, AF064866, AC005484, AC005737, AB026899, AI049743, AI031428, AC004966, AP000500, AC003984, AC004593, AI21653, AI022320, AC004230, U52111, AC005406, AC002477, AC004703, AI022326, Z94055, AC002107, AC002106, AI049849, AI031433, AC010722, AC008072, AI049569, AC007371, AC007207, AI022163, AI031291, AC004707, Z93020, AC004912, AI035086, AC008124, AP000332, AP000053, AP001068, AP000121, AI031387, Z78421, AI049591, AI035034, AC002539, AI022322, AC004028, AC005208, AC004478, D64108, Z30952, AC004234, Z75407, U91320, AI034400, AI022719, AI023284, AC005082, AP001550, AC004765, AC005391, AC006235, AI080278, AI034420, Z93017, AC006947, AC006275, AI023879, U78027, AC005091, AI031230, AI035422, AC005280, AI021407, U82083, AI109616, AC006962, AP000221, AP000085, AC006146, AI034379, AC005164, AC004876, AC002509, AC006011, AI031427, AC002091, AC006511, AI132987, AI035088, AC006132, AI121915, AC005300, AC004865, AI035089, AC006946, X06292, AC004388, AC003004, AC003987, AC004790, AC000081, AP000251, AC004764, AI021978, Z81364, AP000095, AI035681, AI049635, AP000116, AP000049, AP000030, AP000212, AP000134, AC009247, AC005011, AC003084, AC002115, AC006539, AC002468, AP000239, AI031295, AP000311, AI133371, I47234, AI023876, AC005255, AC003662, AP000087, AC005006, AI031282, AC004817, Z84487, AC006283, AC007447, AP0005837, AP000356, AC005089, AC016025, AC006541, AC005081, AF106918, AP000300, AC004694, AI049821, AC004108, AC005841, AP000113, AP000045, AC005213, AC004910, AI031767, AC004972, AC004664, AC004491, AC002365, AI121658, X82877, AI034418, AC003093, AC005393, AC004547, AC006001, </p>

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HTGEG89	7308	786665	1 - 438	15 - 452	AA699670, T87005, AA682585, AD247728, and AA703305.
HTGEG17	7309	662369	1 - 557	15 - 571	AW138672, R01026, AA807185, AA281859, AA281778, and AC008116.
HTGED13	7310	656504	1 - 451	15 - 465	T84646, and AC006487.
HTGEA37	7311	908606	1 - 203	15 - 217	AL040940, and AFI29512.
HTGDX37	7312	708877	1 - 531	15 - 545	W95076, N64844, and R92575.
HTGDX10	7313	963854	1 - 631	15 - 645	AA579041, AW238341, AL800426, N72678, H53546, H93717, AL801563, AL791718, AL800706, AA528336, H81406, H68343, AW275432, AW117860, AA676592, AL791659, AA593828, AA873737, AL500645, AT754926, T15767, D46672, AA525753, AT754293, AL570067, AA565911, AL921765, AL500645, AW028376, AA342238, AA425924, AL654738, AW272389, N54538, AA015948, AL204309, AA653291, AA314404, AA704040, AA515728, AL619994, AA715876, AW023111, AW151761, AT243793, T40394, F29968, AW173443, AA338289, AL078409, AA484892, AL675615, AL791227, AL927275, AA468975, AT744830, AA128947, AA56232, AL120004, AA493789, AL69421, AA483075, AL354409, AA564587, AL298891, AA603502, AA878058, AL302350, AL079894, AA664126, AD69090, AA610353, AT745116, AL921706, T84117, AL431513, AA534047, AL583532, AL613389, AA572983, AL423034, AL19419, T07903, AL356440, AA701122, AT734155, AA084439, AW151247, AL079553, AL065031, AL984168, AW192930, H47835, AL138262, AW089625, AW148821, AL070549, AA015934, AL358928, AL445699, AL250552, AL280227, AL284543, AA528881, H77492, AL620354, T03928, AL150934, AA055784, AA176604, AL678867, N70044, M77858, AA228778, AW337805, T47138, AW080058, AA744423, AA630854, AA609826, AW265468, AL307563, AA484298, AW051819, AA568127, AW304580, AL254770, AL205181, H09639, AA525167, AL251284, AL251034, AL251203, AL223626, AL587583, AL587565, AL249853, AL633386, AL272649, AL653525, AL78437, AC005247, AC005217, AC004887, AC012085, U91331, AC007376, AC003003, AP000350, AT108083, AC004231, AL031123, AC005914, AL008725, AC005088, AL008719, AC005668, AL035249, AL031311, AC007371, AC005180, AC005598, AC006061, AF030453, AC005486, AL035427, AC004167, AC005531, AF001549, AC005610, AC005045, AC003971, AL132642, AL109628, AC004025, AL049591, AC007363, AC001070, AC005377, AC007221, AC007284, AC004552, AC004526, AL024508, AC004217, AC0066480, AC005071, AL035685, AC005094, AL021391, AC008498, AP000065, Z86090, L11910, AC005519, AC005158, AF027390, AL050308, AL133445, AL049778, AC005484, AC004148, AL031003, AL031289, Z98304, AC007842, AC007243, AC005833, AC005771, AC005065, AL080317, AC004685, AC005075, AC005004, AC004069, AC005220, AC007386, AC007381,

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HTGDV61	7314	741381	1 - 569	15 - 383	AW307619, AA251883, AV449640, and AW362295.
HTGDV52	7315	790605	1 - 933	15 - 947	AW301087, AI824945, AW249930, AW410790, AL628800, AW166795, AW273211, AV135164, AL332400, AA826630, AA633504, AW237676, AA902230, AT766293, AA071494, AG659072, AJ091356, AW478386, AI824929, AA341660, AJ910688, AA907080, AW027494, AA866063, N89610, H23449, W82838, AJ9418250, AT206505, AA082316, AW410873, H26265, N89610, H23449, W82838, AJ910688, AA678363, AL207283, H99870, AW135165, AA8889903, R38069, W67376, T07656, AW205531, AW409867, AL420132, T17353, F10626, AW173167, AI858210, AI380828, AA023347, N62165, AA019630, W92151, AA019449, AW050420, AL269983, AW090725, A651789, AW243570, AA017312, W22870, AA831409, AW410789, H42669, H42668, AL335151, AF052137, AL271669, and AB023065.
HTGC086	7316	784676	1 - 523	15 - 537	R91710, R96722, and AL248214.
HTGC060	7317	895628	1 - 715	15 - 729	AA061921, AI770994, AW021207, AL720117, AW193265, AA063173, AL284640, AI583283, CI8993, MT30094, AI350212, AF730074, AA729697, AH41303, AL036037, AI732378, AF154955, AS817604, AL046409, AT751216, AL687343, AL038705, AA490183, AL069692, AW302013, AA634707, AA658362, AA303007, AA478355, AL0246205, AL281881, AI826227,

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					R059094, and N71584.
HTGCD55	7318	732247	1 - 665	15 - 679	
HTGBS94	7319	578786	1 - 387	15 - 401	
HTGBS70	7320	870405	1 - 108	15 - 122	

HTGBS59	7321	739388	15 - 409	15 - 423	N49021, AC010205, and AC005409.
HTGBS51	7322	578472	1 - 200	15 - 214	AC021453.
HTGBS34	7323	576782	1 - 347	15 - 361	N46749, A1818231, AA082588, AA643801, AL046746, AA112791, AW270258, AA551181, AA174016, AA118397, AC004695, AC003682, AL022327, AL136295, AC006374, AC005859, AL031848, 295152, AF163926, AC005037, AC005669, AC005274, AC007059, AL035398, AC002401, AL050307, 233822, AL096791, AC009044, AC007263, AC005406, AC005066, AC005089, AC000900, AC000889, AC006084, AL034548, AC002120, AC007165, AL006996, AL023878, AB026899, AP003350, AF053356, AP000500, AP011063, X74458, AC006388, AL030996, AC004859, AC005536, AC007406, AL139054, AP000116, AP000142, AL008583, AP000311, AL122020, AC005332, AL022165, AP000501, AC006211, AP000449, AF130343, AL132716, AC004030, AL109801, AL071326, AC000159, AC002425, AL031259, and AC004417.
HTGBS08	7324	959609	1 - 796	15 - 810	N51029, and H68078.
HTGBR52	7325	727276	1 - 378	15 - 392	R37214, H04094, AA781420, and AC004638.
HTGBN58	7326	738279	1 - 221	15 - 235	R37012.
HTGBL15	7327	660483	1 - 504	15 - 518	H64944.
HTGBH09	7328	625756	1 - 138	15 - 172	N71861, and N67954.
HTGBE67	7329	751525	1 - 286	15 - 300	AA482846, AC005152, AL121652, AC002330, AB003151, AP000688, AC005089, AC000081, AC005180, AP000495, AC005899, AC005911, AL035249, AC003154, 295152, AC000111, AF166972, AP000248, AC005924, AC005071, AL121658, AC008080, AL050334, AC007546, AL096791, AL031602, and AC007868.
HTGBE59	7330	578807	1 - 478	15 - 492	AL031657.
HTGBE05	7331	932168	1 - 405	15 - 419	
HTGAZ86	7332	785594	1 - 528	15 - 542	N63915, AL453245, AW089866, AA557995, and AL250915.
HTGAZ75	7333	766583	1 - 465	15 - 479	R01774, and AC004985.
HTGAY27	7334	683536	1 - 371	15 - 385	T47772, H832594, AA5352979, T95572, AI954936, AA601033, AL124830, AC005543, AB017654, AC004836, AP000465, AC007057, AC002559, and AL239322.
HTGAX83	7335	781275	1 - 446	15 - 460	N62263.
HTGAW78	7336	773666	1 - 517	15 - 531	N3731209, AA2436961, AA706202, H24953, AW161459, AV161879, AI191343, AL003797, AP936548, AA299422, AA584207, AA569832, AA666066, AV150209, AH439393, AI798407, AW157731, N34258, F31203, AF75127, CI4576, CI5336, CI889426, CI5180, R68503, AW439724, AL226346, AL047480, W072443, R99581, R93658, AI564215, W63553, AL297776, CI4966, AC003777, AA862312, AP69106, AA609826, AI368862, CI5184, CI1504, CI4796, AA984829, T06518, AL003245, AL046830, CI4627, AL024498, AL049779, AL049697, AC007382, AC005207, AC009721, AL021155, AF092852, AL022326, AL034379, AC008015, AC003108, AP000350, 293244, AC004999, AC005231, AL079342, AP000491, AC005866

HTGAT92	7337	496307	1 - 489	15 - 503	AB020866, AF196949, AC007314, Z99716, AC005102, AC006449, AC005594, AC005197, AL022165, Z95703, Z48872, AC002559, AC002565, AF003365, AL035695, AC002563, AL035988, AC005822, AL109628, AC002133, AC000112, AC004941, AC005191, U77079, U77081, AL033379, AC006537, AP009958, AL096711, AC004622, AL023313, AC006160, AC004876, AP000310, AL109801, AP00116, AL096677, AC002425, AL022313, AC0009247, AC007051, AL133163, AC007919, AL009181, AC006139, AC006271, AF116548, AC004895, AC004152, AL031255, AC004834, Z97630, AF003626, AL049843, AC004916, AL120200, AL031283, AC005089, AC007773, AP001118, U95090, AC007774, AC004703, AD000092, AC005216, AC005921, AF196779, AC006132, AC002528, AF027153, Z69709, AC010077, AP000467, AF196972, AL049694, AL031588, AL035086, Z97053, Z53846, AL035664, AC005903, AC005196, AC006130, AC007368, AC007326, AL034417, AC003075, AL020997, AP000031, AC004492, AC010170, AL121603, AC003865, AC004773, Z97989, AC007450, AL022318, AC004031, AL034555, Z97876, Z95118, AC005865, AC004773, Z97989, AC007450, AL022318, AC004499, AC006146, AC004985, U77080, U77081, AL031662, AC006237, AC005067, AL109984, AF017104, AL049553, AC016831, AL031651, AB014540, Z82176, AL050404, AL110122, AF191069, AF096876, AC004150, AL031230, AC007993, AL021939, AP000332, AC003084, AC005783, AF116546, AL117354, AC002477, AC004801, AB000876, AC003030, AC002504, AC006597, AF124730, AC004477, AL035070, AC005666, and AC007263.
HTGAT92	7337	496307	1 - 489	15 - 503	AA213676.
HTGAT55	7338	732248	1 - 683	15 - 697	AA033990, and W78755.
HTGAT16	7339	919524	1 - 343	15 - 357	H69643, T19082, T36034, AA578092, Z44861, F08360, R18488, Z42109, R11866, T36046, RS4184, Z45556, T39821, AB17898, AA772776, F06240, and AC005332.
HTGAT01	7340	870424	1 - 359	15 - 373	AA731219, and AL034418.
HTGAS15	7341	870423	1 - 433	15 - 447	NG3061, and AL039423.
HTGAR44	7342	716740	1 - 470	15 - 484	T60572.
HTGAR39	7343	705634	1 - 412	15 - 426	AA238903, and AL035455.
HTGA186	7344	785672	1 - 262	15 - 276	AA001630, and T99029.
HTGA173	7345	764598	1 - 477	15 - 491	H83056, T08052, AW373586, and AW373401.
HTGA196	7346	796541	1 - 605	15 - 619	N75646, AA442831, N64799, AA953995, and AW298012.
HTGA115	7347	870441	1 - 463	15 - 477	AA693675, AA737318, AA552885, AL674873, AA020850, AT246796, AB01701, AA160481, AL041146, AL824562, AB01591, N29933, H50727, AW270382, AL079843, AA845813, AA458736, AA890235, AA158956, AW407578, F16274, N23896, AA916371, AA045299, AA483771, AA099612, AA121815, AW341892, F25972, F25867, T07287, AW024008, AA199616, AW236342, AA134669, AB302994, AH32814, T16427, AA183569, AC000660, AC003029, AC005207, AL031770, AC009740, AL080114, AC006138, AC006049, AF045555, AP000513, Z85987, AF106564, AL031311, AP000966, AC005900, AC005081, AL109847, AC004858, AP000959, AC007688, AL022320, AC005023, U91321, AF013593, Z68331,

HTGAI13	7348	955227	1 - 413	15 - 427	AC006965, AC002470, AL133011, X52851, AL012008, Z72520, L34079, AC004180, AC005175, AC004202, AC004227, Z99756, AF130247, AL031777, AF121781, AC004856, AP000504, AB020867, AP000518, Z98036, AL022163, AC000159, AF227510, AP001068, AC007324, AF165138, AC007130, AC004998, AC004395, AL034551, AL050318, U95740, AL122020, AC005799, AC005548, AC006016, AB023054, AC004816, AP000555, AC008079, AC005695, AC007842, AC008055, AF001549, AL011930, AC003070, AL035458, AP000354, AF165142, AP000952, AL035249, AC005332, AL035494, AP000010, L44140, AP000130, AP000208, U80017, AP000247, U94740, AC001163, AC002288, AB017567, AC006980, AC000451, AL008735, AC000075, AC004755, AC006930, AC005545, AC004236, Z75744, AC000041, AF165141, AL049736, AC005156, AC004007, AC002036, AC005694, AL033392, AL035466, AC006525, AL022315, AL109611, U89337, AL031775, AC007397, AD000092, AC005091, AL096862, AL008730, AL049760, AL096712, Y18000, AC005664, AL034429, AC004542, AL121653, AC002377, AC005702, AL035684, AC005527, AC004981, AL033381, AC006336, AC004062, AC018769, AC018767, AC005531, AC000097, AC006222, AC004053, AC005510, AC006948, AC006064, AC002059, and AC007637.
HTGAD62	7349	734052	1 - 518	15 - 532	H62811.
HTGAD16	7350	567432	1 - 1025	15 - 1039	AA031926, T10780, and Z73639. AL037910, AA488746, AB59834, AL623899, AL046409, AW406447, AL284640, AA192278, AA468322, AL143143, AW189068, AA808263, AA814778, AA526193, AL561060, AL131303, AW402458, AA878149, AW276827, AL119691, AW193265, AL281881, AL445815, AL550211, AB63720, AW080863, AL446474, AL613280, AL571512, AW265138, AL342681, T05769, AW277109, AA857296, AL284405, AL284583, AL192631, AL334443, AL270117, AL371249, AA714950, NS3130, AL021476, AA829225, AL120976, AL053672, AL079129, AL078009, AA572960, T40077, AL061334, AL375710, AW271904, AL249688, F17700, AA578918, AL1471691, AW276984, AL174230, AA457685, T40612, R92629, AA814578, AW337954, AL365988, AL769271, AW089810, AA501784, AL520724, AL859946, AA501614, AA577906, AA086318, AA632845, AL160117, AL036283, AA631507, AL590772, AL754103, AL109753, AL031666, AC006285, AC009501, Z96568, AC007371, AC005598, AC007032, AF07058, AC000134, AC004148, U57007, L51997, AL079342, U57005, AC005093, X73535, AC007227, AL049843, U18391, U57006, AC004024, AC005378, X54181, X54178, AL031589, Z84480, D86992, AF196779, AC002476, X54175, U18392, U18394, AL035684, X55925, U57008, U18390, X55932, U18398, D88270, U91321, AC004257, AC002492, AC005620, AF015153, AC004821, AC005538, X54179, AC006449, AC000070, AL011930, AC004168, U57009, AC005385, X55924, U18395, U18393, X54176, M37551, Z22660, AC005778, AC006511, AL109628, AL132712, X54180, U67801, AL031257, X54177, Z93341, AL023553, AL022320, AC003107, AC006537, AC008275, AL096701, X55926, AC002544, AL096774, AL117352, X55923, AL050338,



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HTGAD05	7351	932378	1 - 359	15 - 373
HTGAC17	7352	664513	1 - 207	15 - 221
HTGAA80	7353	574099	1 - 263	15 - 277
				AA136219, and AA136122. N32296, and AW294045. AA767660, T59612, H63465, AL62424, AA513983, F13808, AA078539, AW020088, AC006249, AC005377, AC007637, L29766, AC002544, AL034423, Z93016, AC005015, AD000092, Z98885, AL132987, AC004802, AC007540, U91326, AC009247, AC004887, AC007227, AP000359, AC004678, AC004448, AC006381, U66061, AC005102, AC005696, AL035695, AC002301, AC000067, AC006211, AC006046, AL022315, AC005484, AL035458, AC004894, AC005632, AC005595, AC000396, AL022312, AC004859, AL022238, AL022320, AC006057, AL049636, AL049776, AC006501, AC004797, AC000300, L78810, AC004968, AL035086, AC004347, AC002316, AB008877, AC007056, AC000300, AC007537, AL109758, AC005071, AC005670, AC004883, AC004820, AL035423, AC006064, AC002511, AL031283, AC006463, AL139054, AC002996, AC005736, AC0050291, AC005041, AP001116, AC004851, AL034420, AC006088, AC006468, AC000025, AL022336, AL049569, and AC005207.
HTGAA44	7354	574114	1 - 252	15 - 266
HTDAC74	7355	765656	1 - 446	15 - 460
HTDAB18	7356	870746	1 - 1454	15 - 1468
				AA157291, T47205, T47206, and AF108459. AP936530, AL697020, AA025283, AW268465, AA449313, AW264405, AL178679, AL081908, AL031534, AL377811, A275521, AL377061, AL432200, AA234506, AL63281, AW272480, AL800544, AA194935, AA421721, AW168455, AW476738, AA449948, W38696, AA470900,

HTBA07	7357	954434	1 - 447	15 - 461	AA195534, N04923, AI435923, AA234120, AW269667, AA086243, AA292106, W37558, AI253127, AA112193, AI266499, AI215742, AA839883, W37218, AI265991, AA292105, AA479162, AA878762, AI142708, AA683553, AA410515, AI280280, AA683562, AW132000, AI301437, AW008356, AA889823, AA2949038, AF045573, and AF115510.
HTBA07	7357	954434	1 - 447	15 - 461	AA179994, AA382187, and AA005527.
HTBA07	7357	954434	1 - 447	15 - 461	AA332172, AA382173, AW276827, F36273, AW193265, AW270270, AI350211, AI613280, AI141704, AI298710, AI148277, AI49365, AI284640, AI431303, AI733836, AI601334, AW162489, AI963720, AW265009, AW148792, AA857486, AI088162, AA486559, AW193432, AW049722, AI688446, AI610159, AW007789, AA084070, AI768952, AW151991, AI270117, Z83988, Z82188, AA001549, U63721, AI133238, AI034429, AI133396, AP000694, AC005921, AI404675, AI031848, AF129736, AC002470, AI031295, AI133246, AC005736, AC002117, Y14768, AF200465, AI132777, AC003080, Z95113, AC04150, AF11168, AP000555, AC004991, AI049776, AC007308, AP000505, Z83840, AP000557, AC03108, AI109628, AI050318, U91323, AC005261, AC006449, AC004804, AI133448, AC005409, AC005332, AC004534, AI031729, AC004812, AP000967, AC005962, AI031670, U62292, Z68321, AI121603, AC006057, AC001134, AC002596, AF134726, AC002288, AC005726, AC0060241, AI003147, AC005015, U91321, AI021707, AC007226, AI022318, AC008372, AI031431, AC004686, AF196779, Z98200, AC005722, Z82244, Z84466, AC002073, AP000302, AP000359, AC005808, AC002369, AC002471, AI135744, AC005624, AI096701, AC004859, AI035659, AC004876, AF207550, AI049872, AC003037, AP00114, AI009181, AI034548, AC005529, AP000046, Z95152, AI031680, AC003041, AC007040, AC006480, AI049869, AI034417, AC004887, AC005180, I47234, AC007934, AC0077541, AC004491, AC005620, AC004771, AI021546, AC005412, AC005081, AC007225, Z98751, AI035587, AC010170, AC002395, AI022327, AC005971, I78027, AC005207, AC007435, AI022327, AC002316, AC007216, AI035420, AC007193, AC004418, AI004326, AC004526, AC000447, AC004477, AC020663, AC004837, AC006430, AC002059, AI034420, AC004757, AC004253, AI049843, AC005516, AP000556, AC003684, AC005598, AI139054, AC004100, AC005740, AC002544, AC004985, AC006468, AI096791, AC005702, AI008725, AC005844, Z83986, AI023807, AI021578, AI049539, AC005670, AC005274, AC006026, AC005520, AC005527, AF181897, AI022476, AC005509, Z99716, U07562, AC003101, Z69917, AC004230, AC006121, AC007731, AC006511, AC005000, AF109907, AI020997, AI112020, AC006966, and AC003669.
HTBA12	7359	969518	1 - 426	15 - 440	AI924000, AA887916, and AI096755.
HTAD72	7360	880561	1 - 232	15 - 246	I57855.
HTAY90	7361	973870	1 - 398	15 - 412	AC006121.
HTAQ05	7362	930947	1 - 345	15 - 359	AJ003440.
HTAQ58	7363	838701	1 - 495	15 - 509	W26273, and W28557.
HTAT22	7364	910040	1 - 452	15 - 466	

HTAIF11	7365	965738	1- 515	15- 529	AB0002347, and AL049843.
HTAH02	7366	918304	1- 264	15- 278	1785562, AW161607, and A1879090.
HTAGB16	7367	870855	1- 567	15- 581	R18870, H17371, R22698, A1681963, R52427, AC004882, AC004531, U91323, AC005529, Z844884, AC005544, AL132712, Z81364, AC004832, and AC008372.
HTAFC92	7368	790091	1- 406	15- 420	2804868, AC005454, AL132712, Z81364, AC004832, and AC008372.
HTAEV23	7369	959129	1- 810	15- 824	A006883, AC0476998, AA019020, AL120070, AL046807, AL042275, and D43949.
HTAEB05	7370	932459	1- 539	15- 553	AL121511, AF298755, A0052329, AW294401, AW292459, and U62317.
HTAEK41	7371	870858	1- 309	15- 323	AF123607, and AB006626.
HTAEF68	7372	753597	1- 156	15- 170	H20766, and AB002339.
HTADW88	7373	425065	1- 234	15- 248	AL133448.
HTADWS2	7374	537376	1- 156	15- 170	AL133448.
HTADO10	7375	968307	1- 190	15- 204	Z41228.
HTAD068	7376	753598	1- 528	15- 542	791391, AW299806, and AW299816.
HTACX05	7377	932467	1- 649	15- 663	W05789.
HTACW82	7378	778852	1- 360	15- 374	R02728, A6099715, A1052571, and AL133404.
HTABK47	7379	720684	1- 695	15- 709	A004882, A6077920, W88950, A6777748, R05883, A1889377, A1687430, A3381938, A1609329, N77387, A1870875, A037184, A042476, A0700884, A4431317, A18082772, A0093356, A4591129, A0953855, A4828290, A199660, A3169307, AA005088, AA889621, A1087410, N52427, AA879140, T44882, A1862944, A4994314, A807241, A1310814, A1864552, A0479573, A6494382, A4889068, AW392436, R51112, A804805, AA215997, A1184967, A807932, N95470, R69182, F29171, AA431669, A4429112, AC005480, and AF132944.
HTABE12	7380	971524	1- 246	15- 260	AA873579, and H69131.
HTAAO12	7381	972231	1- 707	15- 721	A0083187, A381398, A367305, R50884, AW376970, AW376967, A1186803, AF123887, AF144695, and A0187904.
HTAAB06	7382	960796	1- 373	15- 387	AF172331, A5574361, A381015, A574404, A4574322, and A3384423.
HTAAAB45	7383	518652	1- 384	15- 398	AA381161, A381160, A4635976, A4845212, AA382554, A528390, AA847508, AA847427, A4211777, H06909, AA484892, A4729007, F17312, A4740571, N66684, P33684, H03293, F19606, A0151761, AA568204, AA570740, AA483606, AA243976, AA557945, H53127, A1704403, AF798493, A4714011, A1306232, A251576, A907411, A18081303, A1809384, A579208, A915081, A4888419, A8362243, A4714282, A1583466, A4523695, AW274191, H66577, A4482954, A270047, A480245, A4361550, A526724, H63660, R05840, A5384482, A669699, AW089950, A4573564, A4770567, A574442, H022499, T57767, A1872229, H53109, N72170, A5848489, A0793261, A0737526, A15900404, A6023764, A4661590, AA610509, AA833896, A4670267, A060200, AW337526, A15900404, A6023764, A4661590, AA610509, AA833896, N93272, A4672905, A2215470, AA833875, A595547, AA829044, AF001177, AC005306, AC006241, AF207525, Z69890, AC004966, A009183, AL139054, AC005730, AC006509.

HTAAA31	7384	693527	1 - 286	15 - 300	AC005089, Z83840, U95739, AL049709, AL121603, AL0096701, Z98743, AF129756, AC007421, AC005280, AF165922, AC004216, AL136295, AC005529, AC000553, AC004000, AC002369, I34294, Z83822, Z82203, AC004858, U47924, AP000503, AC006441, Y4768, AP000130, AC005229, AC004019, AP000505, U91327, AC009516, AC005519, AF134726, AC007666, Z92542, AC006581, AC005484, AL034420, AL049869, AF205588, Z83826, AC002401, AL035249, AC002306, Z82215, AC005527, AP000215, AC005585, AL034379, AL035079, AC008116, AC004821, AC005365, AC008085, AL020997, AL034421, AJ133269, AC005768, AL050348, AP001065, Z98304, AL096791, AC007686, AC002477, L78810, AC005736, AL021391, AF064858, AC002588, Z81364, AB017602, AC003043, AL135744, AF176815, AC004967, AP000555, AC004975, AL050318, AC005703, AL008726, AC002375, AL035587, Z83844, AF111167, AL133246, AL049780, AC002492, AC006039, AC005412, I44140, AC004882, AC002126, Z81450, AC006261, AC003966, AC005841, AP000355, AC004033, AC004859, AC006088, AC005202, AF111168, AC005632, AL035684, Z99716, AC002310, AC007227, AL031255, AC007371, AC005829, AC002312, AC004039, AC005966, AC006160, AC006066, AC006511, Z99714, AC004659, AL109628, AL022476, AC005565, AC005104, AC007381, D84394, AC009509, AC005011, AL031673, AC007226, AP000112, AP000044, AC005015, AP000552, AP000556, AL109963, AC006162, AC006120, AC000097, AC005393, AL035086, AC005231, AC005261, AL109798, AP000344, AC002470, AC005067, AC004491, AL080243, AC006547, AL049775, AC003109, AP007825, AC005755, AC002301, AC005972, AC000052, AC006960, AL133163, AC004814, AL078624, AP000692, AL049712, AC004905, AC012627, AL049751, AC004912, AC003957, AL008723, AC006333, AC006255, AC005225, AC003007, AC005822, AC004525, AC005146, AC004167, AC002350, AC006146, AC004895, AL133112, AC005159, Z84466, AC005057, AC002302, AP000116, Z97183, Z85987, AL031284, AC005031, AC005953, AC004587, AC004125, AC0006487, L78833, AC004072, AL133321, AC005684, AC005821, U80017, AC004228, AC005913, AC000003, AC006121, Z69706, AC005839, S42653, AC004929, AC005696, AL021394, AC006468, AC005837, AF10907, U91323, AC005253, AL009179, U62317, AC007559, AC004531, AL109627, AC005363, AF200465, AC010205, AL022334, AL021917, AF064861, AC005409, AC005532, AC007050, and AC006388.
HTAAA31	7385	693527	1 - 286	15 - 300	AA380933, and N41495.
HT4AY23	7385	973773	1 - 444	15 - 458	AL031657.
HT13A67	7386	752169	1 - 470	15 - 484	R56611, H06924, R25038, and AW380697.
HT3SH28	7387	508061	1 - 228	15 - 242	
HT3SA81	7388	589206	1 - 303	15 - 317	AI660664, AA380785, AA063001, AA740970, AI473914, AJ000553, and AF051325.
HT3SA80	7389	781631	1 - 339	15 - 353	AA773463, AA828637, AA556084, AA133596, AL042667, AL042670, T50676, AA488419, AA076418, AL635609, AA156147, AA599199, AT54170, AA557945, A1556834, AW069412,

HT3SA71	7390	766391	1 - 402	15 - 416	<p> AA431513, AA225795, AL223968, AA988610, AL538236, AL370470, AA015948, R67038, T10218, AF791659, AL307563, AA515728, H81406, AL282821, N94342, N29936, A W272740, AA613761, AA864426, AA632765, AB11201, AW238341, AL434037, AL079894, AL570943, AA262752, AW161016, T34066, AA719564, AA779783, AA079421, AB69090, AA133293, H53546, AA713769, AF758424, AA280509, AL567676, AA491968, AL080732, AL049701, AB63856, H72943, AL278972, AW105729, T51436, AW149241, AA676592, W69639, AA579082, AA522864, AA584756, AF005360, AP003354, U15422, AC005839, AC002310, AC005502, AC020663, AC005399, AC005412, AC006241, AL034423, AC000353, AL020997, Z83822, AC006312, AL132712, AC005972, AL121652, Z05331, AC007225, AF196779, AP000131, AP000209, AL035072, AL096701, AP000280, AP000248, AC008372, AL031595, AF027550, AP000696, AF196972, AF134726, AL023284, AL034429, AC004851, AC002302, AF027550, AL118497, AC008126, AL022238, AC006538, AP000359, AC004966, AL022330, AL049795, AC005566, AC005941, AC006270, AC004647, AC004032, AC007327, AC004099, U96629, AC005015, AL133244, AP000030, AC005081, AL022322, AL246003, AC005736, AL096791, AC007207, AC007686, AP000022, AC007376, AL139054, AP000117, AC005324, AL049834, Z84466, AC007917, AL049838, AC006011, AL021391, AL034420, AC004531, AF047825, AL109627, AP000115, AL031228, AC004382, AL049759, AL020995, Z86090, AC002347, AC006071, AC005363, AF005336, AL121658, AP001052, AL030996, AC004988, AC004975, AC007182, AC004257, AC005304, AL035071, AL080317, AC006388, U89335, AC004084, AP000692, AL049569, AC002400, AF045555, AC004814, AC006057, AC005102, AC007537, AC007308, AF088219, AC006026, AC007690, AF196971, AC008044, AL020269, AP000691, AC005531, AC005189, AL117330, AP000553, AL022316, AC002350, AJ003147, AC005666, AL049776, Z98884, AL049757, AC004659, U85195, AF187320, AL121769, AL022311, AC004216, AC002128, AC006139, AC004815, AL080243, AC005046, AC007685, AC002425, AC003043, AC007688, AC005071, AL133448, U78027, AL079339, AC007637, AL022312, AC006960, AC007371, AC004859, Z83844, AE000658, AL031311, AL096712, AC007955, AC002470, AC002565, AP000355, AL032821, AC002559, AC005006, AL034379, Z82182, AB023049, AC008012, AC005363, AC004517, AC007546, AL031431, AC008394, AC007450, AL008635, AC002301, AC007617, AC004883, AC008321, AC004841, AP000163, AC004134, AL021546, AP000514, AC006130, AB017602, AC006025, AL122020, AC004792, AD000092, AC005480, AC002117, AB008877, AC004223, AC006025, AL122020, AC004792, AD000092, AC005480, AC002477, AC006111, AL078638, AC007014, U10087, AC008154, D87012, AL031295, L78810, AC004019, AC011311, AC004905, AL009181, AF111167, AL0117344, AL031780, AC005726, U91326, AC007993, U47924, AL049872, AL035682, AL031584, AC002544, Z94801, AL049832, AL035422, AF04455, AC005779, AC005837, AC006487, AL021808, AF030453, AL021707, AC002546, AL031680, AC004973, AL031602, Z68226, AC003669, and AC006084. </p>
HT3SA71	7390	766391	1 - 402	15 - 416	<p> AA812058, AL135696, AA569648, AA659324, AA569667, AL043351, AA470899, AA449997, </p>

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HT3BK75	7392	766488	1 - 366	15 - 380	R74031, AL131053, AL288514, AW207346, and AL239976.
HT3BF33	7393	527782	1 - 287	15 - 301	
HT2TA82	7394	522751	1 - 349	15 - 363	
HT2TA37	7395	522754	1 - 318	15 - 332	
HT2SA86	7396	524290	1 - 421	15 - 435	AA485578, T74382, AL18921, AA584167, AL042906, AL042905, AA489939, T00544, AL250281, AL042539, AL016704, AA708108, AA525824, AA665160, AA601348, AL048090, AA574077, AA224525, AL048060, AA837035, AA632821, AA601376, AA425283, AA847507, AL065031, AW263396, AA501821, AA342040, F27846, AA533725, C16675, AA379965, F29968, AL926104, AA661583, H93404, AL1919048, AA372949, AA477103, AW166611, AA834816, AL345157, AA702206, AA720732, AA349437, W01265, H73230, AA083046, AA634889, AL587565, AA314494, AL174703, AA767660, AL587583, AA515048, AA496895, AL044701, AL133861, AL040054, AW131457, AA365135, AA525753, AA351056, AW021847, AL134720, AA524804, AL500260, AW438643, AA577824, AA577939, AA188664, AL003068, AW265735, NS4397, AL800236, AL350211, AA469571, AL872020, R33941, AL547110, AA747469, AA600202, AL445674, AW087537, AA847499, AL367887, AA372312, AA714011, AW364981, AL049999, AL499994, AA152404, AL588877, AL149528, AA714806, AA248710, AW275788, AL049999, U80459, AC005225, AP000557, U82838, AL049829, Z98051, M63544, U95739, M63543, AC007182, AP000113, AL049776, AC005488, L78833, AC006064, AC004242, Z97054, AC005365, Z93244, AL035587, AL035458, AC000353, Z83838, AC005015, AC005837, AC004520, AC002301, AC005821, AC005899, AF109907, AL050307, AC010205, AL031295, AL031774, AC004975, AC006344, M89651, AC006538, AP000299, AL049697, Z83840, AP000556, AC007546, AF039907, AC005778, AC005913, Z97876, AL133396, AC005155, AC006210, AC004156, AC005519, AC005399, AC005082, U91318, Z82206, AC005081, AC005529, AC003009, AL022336, AC007298, AC004858, AP000031, Z95304, AC005971,

HT2SA63	7397	518341	1 - 414	15 - 428	<p>AL022721, AL133448, AC005722, AC006443, Z84480, AL008582, AF196779, U85195, AC006430, AC007529, AL049874, AC005409, AC007055, AE000658, AL035249, Z99716, AC005412, AP000213, AC002314, AL034582, AC006211, AL031681, Z93241, Z95114, AC007407, AC004938, AP000135, AC006121, AL031291, AP000500, AC003682, AC002476, AL096703, AC005876, AF031078, AL021391, AC007437, AC005231, AC004683, AP000045, AC004793, AC002544, AC006080, AF030876, AL022318, AC000553, AC006241, AF004782, AC004601, Z93017, AC004953, AC003046, Z98941, AL049795, AC007845, AC005358, AC004910, AC007226, U63721, AL080243, AC004859, AL080317, AL135744, AC005527, AL035659, AF217403, AL121653, AC005089, AC002350, AC004517, AL022223, AL022237, AL049872, U521112, AC020663, AL109984, AC005011, AC007376, AC006285, AC006509, AC006042, AL008721, AC002094, AL096678, AL022163, AL031255, AC005695, Z85996, AC004526, AC005803, AC007021, AL031680, AC004491, AF165141, AC005531, AC003108, Z83244, AC005037, AC007461, AC016025, AC006312, AC005697, Z85986, AF194465, AC000120, AC007676, AC004408, AF207550, AL034423, AC005940, AC015853, AC006277, AC009247, AC004106, AL033527, AC007114, AL024507, AC005701, AL023316, AL034343, AL010770, AL008718, AL078611, AC007216, AC006238, AL031283, AL109952, AC004884, AC002538, AC006084, AC003982, AC005839, AC006960, AL022719, AC004813, AL035413, AC004383, AF165926, U78027, AC004865, AC007774, AL031777, AC005312, AL008635, AC002430, Z98048, AC007565, AC016026, AL049779, AC004522, AL034429, AC002468, AC006480, AC005799, Z95152, AC005207, AC002563, AC005138, AC005037, AL031290, AF111169, AC002429, Z68192, AL122023, AC007384, AC005323, AC007435, AC002310, AC010077, Z93023, AP000694, AC006511, AF001549, and AC004878.</p> <p>AA664248, AA768179, AA484892, AW019964, AJ077817, AL624379, AL536858, AL536440, AW272640, AB14682, AL291439, AA862075, AW089950, F35684, AL125615, R72242, AL133164, H77505, AW148775, AL699833, AA837771, AL469172, AA483034, F32248, AL130709, T94072, AL537995, AW190277, H86579, AA714449, AA558697, AB915081, AA745410, AL119838, AA584207, AW249541, AL280504, AA441788, F36773, AL791659, AA728861, H63607, AA715351, Z99127, AL080243, AL008582, AF181896, AC004448, AL049758, AL139054, AC004013, AC005036, AC000483, AF141508, AC007421, AC005773, AL049856, AL010770, AC006947, AL121825, AC004125, AC005231, AC006600, AC005483, AC005911, AL021939, AC005425, AC021627, AC003043, AL031010, AC002980, AP000307, AP000115, AP000501, AC004492, AL031602, AL133246, AC000353, AL031447, AC008044, AC006071, AC001227, AC002101, AC005585, AC004832, Z84466, AL031666, AP000350, AF196779, AF000277, AP000037, AP000105, AC007279, AC005520, AL050307, AC005663, AC005837, AC005602, AL035455, AB017602, AC006011, AC004382, AL022232, AC005399, AL049869, AC005664, AC006581, AC003110, AC005049, AL0055914, AF111167, AP001051, AC007227,</p>
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HT2SA50	7398	522771	1 - 580	15 - 594	AF067844, AC004531, AL0409743, AL0231575, AL031672, AC019014, AC007312, AC005666, AC006959, AL132987, AP000503, AL031984, AC004849, AF134726, AC005066, AC007388, AC007934, AC006050, AC002997, AL0031281, AL035690, AL133500, AF196971, Z97054, Z83840, AC006511, AC007326, Z84482, AC004185, AP000509, AC003561, AC003689, D84394, Y14768, AC007326, Z84482, AC005531, AP000068, AL049569, AC006449, AP000310, AC008064, AC000075, AC000084, AC006468, AC004132, AC004222, Z94161, AC004638, AL031664, AC002563, AC002107, AC002106, AC004963, AL117328, AC004009, AC004910, AC002115, AC006146, Z84487, AL021367, AC005599, AC007270, AC005323, AC006312, AP0015262, AJ229043, AC006160, Z81007, AC006057, AC002091, AC004025, AP000328, AP00170, AP000055, AP000123, AP000044, AC004955, AL031729, AL121757, AC004682, AD000813, AL020997, AL078472, AL049694, Z99734, AL049795, AC004390, U63630, AD000991, AF061032, AC006449, AC006597, AC006130, AL109952, AL035089, AC008072, Z72749, D86995, AL132826, AC006597, AC006275, AL135744, AC005328, AC005227, AC004796, AL121871, AC018633, U02054, AC006014, AC004659, AP000348, AP000349, AL023513, Z93017, AL035495, AC004234, AC008014, AC004659, AP000348, AP000349, AL023513, Z93017, AL133245, AL031848, AC007347, AC005988, AF029308, AC006101, AP000689, L40817, UI5422, AL133485, AC006930, AC004477, AC004895, AC002553, X87344, AP000116, AP000505, AB023049, Z97876, AC020663, AC004810, AC005348, AC005014, and AC005944.
HT2SA48	7399	508077	1 - 260	15 - 274	T90639, AL037825, Z79714, T77832, and AL049991.
HT2SA47	7400	578704	1 - 326	15 - 340	AL572364, AL656924, AL678238, and AL073806.
					AA315580, AA629799, R10762, AA737320, AL1818532, AL1818533, AA069697, AL625427, AW269051, AA8357694, AA837054, AA069300, AL264671, N35626, AW079382, AA134390, AA115721, AL189655, AA626764, AA160498, AA321752, R46585, AA662431, AL047467, AA321116, AC006057, AF196779, AL121603, AF050154, Z15025, AC007225, AC004797, Z98743, AP000505, AL133163, AC005670, AC002312, AF129756, AC005529, AP000088, D87675, AP000326, AP000054, AP000169, Y14768, AC004882, AC005089, M19364, AL049760, AC006948, AF196972, AC005049, AC004841, AF045555, AC005081, AC005759, AC004032, AL031255, AC002390, Z68870, AL078596, AL022336, AC006450, AC000125, AC000353, AC002477, AL035249, AC005702, AC006241, AC002347, AC005695, AL096791, and AC007450.
HT2SA38	7401	840184	1 - 388	15 - 402	AC006010.
HT2SA37	7402	695038	1 - 143	15 - 157	AC006010.
HT2SA26	7403	522770	1 - 391	15 - 405	Z95158.
HT2SA13	7404	870917	1 - 333	15 - 347	H30696, R84479, AA501947, and AA708614.
HT1TB40	7405	575355	1 - 328	15 - 342	AA312331, AW020150, AL537368, AL521525, AJ926102, AA302979, AJ242614, W60077, AI791659, AA747234, AJ266359, AA968883, AB011116, AC005911, AC005231, AC004851, AC004650, AL035086, AL031282, AC004797, AL031291, AP000503, AC006449, AC007151,

				AL049776, AL109801, AL049538, AC004706, AF030453, AC004019, Z95116, AF134726, AL133448, AL009181, AC005088, AC005362, AC003030, AC006543, AC002470, AL049653, AC005512, AF000694, U62317, AF196779, AC003029, AC005666, AC001587, AC004477, AL033527, AF000641, Z84480, AL133246, AC005300, AC006544, AL049569, AC004331, Z95331, AC005225, AC006261, U91326, AC004150, AC005529, Z84469, AL049830, AC001231, AC005280, AF001548, AC004841, AL049757, AL031577, AC004408, AC007057, Z85986, AC007731, AC004033, AC005516, AF205588, AC006064, AC005500, AC002045, AC004815, AC003553, Z93023, AC005071, Z98048, AC002350, AF000501, AC006111, AC002517, AC012384, AC005237, AF111168, AF000557, and AC007999.
HSYDH60	7406	949156	1 - 969	AA151562, AF761915, AF133447, W716635, AF070219, and AC005358.
HSYC204	7407	928935	1 - 447	H8127, T05941, and H49481.
HSYCV01	7408	940661	1 - 509	H82720, AW239263, N36040, N46516, N28649, AA3389677, and AC007541.
HSYCS04	7409	926943	1 - 235	AW192637, AA565972, AL888582, AW189338, AL338022, AA687891, AA227233, AA720594, AI016729, AW020150, AI926102, AW169301, AA601376, CI4614, AW273256, AA516061, AA630205, NS9038, AA463832, AA533660, AI696455, M77888, AA015753, AA595661, AA315052, AI797998, H15535, AI521525, F02478, AL118628, AI537368, AI394182, AA847181, AI439525, AW085626, AA297208, AA525818, AA742781, R45370, AW022368, AA653150, AA253033, AI375085, R60336, AI300608, AA253068, AA299034, AA206681, N35783, AA302979, AL109984, AC004033, AL021707, AC007050, AC004913, AL031722, AL021393, AL133241, AL049643, AC002996, AL080276, AL078474, AL031255, AC007371, AC003108, AL008382, AC004804, AB026906, AC007731, AC005500, AC004019, AF196969, AB032996, AB001523, AC002054, Z93023, AC007073, AL1135744, Z98051, Z86090, AC002470, AC004881, AC004017, AL033504, AC002477, Z99129, AF038458, AC005971, AF165926, AF064861, AC006035, AF217403, AC005800, AC005876, AL022165, AC005015, Z82211, AL121603, AC005602, AC008018, AL031432, AC005250, Z84480, AC005409, AC005776, AC006597, AC004072, AL133321, AC008134, Z93241, AL096774, US2672, AL024507, AF000207, AP00129, AC005531, AC002492, U10580, AC005740, AL023575, AC004890, U91320, AL022157, AP000695, Z97056, AL121652, AC007510, AC002350, AC002991, AC006039, AC007421, Z78021, Z95327, AC002310, AC010170, AC020663, AC007664, W78027, AC007387, AP000070, AC006312, AC006381, AC005666, AC002117, AC005525, AC005484, Z83844, AC000688, AC007093, Z98946, AL096757, AL021579, AC007736, AC007226, AL035422, Z81370, AC006486, AL021706, AC005527, AB018315, AL035667, AC007666, AF129078, AC004662, AC006639, AC007381, and AC004549.
HSYBZ51	7410	725386	1 - 485	W39560, and AL1216042.
HSYBX42	7411	713630	1 - 197	AA148244.
HSYBW55	7412	731627	1 - 719	N40307, AL186972, AW075597, and AA852539.
HSYBK77	7413	772067	1 - 529	AW338048, H85292, AA526839, AA825639, AL082768, AA009809, AL082750, AW452772.

HSYBH70	7414	756492	1 - 563	W90074, and HS8434.
HSYBH16	7415	661807	1 - 838	AF743403, AW207623, H11817, AA019397, R13362, and AA203639.
HSYAV79	7416	928403	1 - 396	AA252919, W94652, AD68537, N35522, N26472, W94613, A1733918, AA399170, N49231, AA936187, and AC007016.
			15 - 410	AA252272, A114591, AW188427, AA33095330, AA216397, AL040521, AA0585245, A1537772, H65445, AL049766, AC005591, AC004686, AL096791, AL009181, AFE12956, AL022322, AC005015, AC005102, AC005940, AC005399, AC004854, ZS5987, AL031587, AC005839, AC000134, AC005736, AC008018, AL031005, AC004263, AC005411, AL049643, AC006633, AL031588, AF063356, U52112, AC002544, AL049829, Z93930, U91321, AL049643, AC005914, AC005778, AC007030, AL031295, AC002997, AC002073, AC005237, AC005071, AL031729, AL022316, AC012384, AL049869, AP000962, AF207550, AL132712, AC006948, AC004913, AL109798, AC000333, AC005726, AC005324, AC004675, AC004962, AC003667, AC004660, AP000512, AC006120, AC006311, AC006241, AC004887, AC007225, Z99716, AL049780, AC007055, AC006530, AP001053, AC007664, AF088219, AL049709, AC003274, AC006449, AC007227, L44140, AC003070, AF134726, AC005562, AP000065, AL031311, AJ003147, AC007226, AC007308, AL110122, AP000550, AC004020, AC007421, AC004755, AC003663, AC005620, AC003316, AL135744, AP000045, AP000113, AC006064, AC002115, AL034562, AL049759, AC004673, AP000240, AC005924, AC005899, Z82214, Z70280, AC005041, AC004560, AP000049, AC004408, AC004008, AC000097, AL008583, AP000311, AF111169, AC006121, AC006538, AP000116, AC005529, AC006547, AC005363, S56773, AC005317, AC007011, AC002352, AC002425, AL049569, Y14768, AC005619, AC006285, U62293, AL136295, AC005060, AL133163, AC007919, AF015416, AP000556, AC000481, AF196969, AP000505, AL022721, AL136130, AP000248, AC007371, AC009516, AC005360, AC007546, AC005243, U52111, AL136130, AC009247, AC006965, AL133500, AC008132, AL117238, AC006571, AC005943, AC005089, Z92542, Z98949, AC003681, AL035413, AC005486, AC001259, AL117694, AC004050, AC007981, AL008718, AC003006, AL022328, AC003010, AP001046, AC004491, AC006251, AL078638, Z97181, Z81369, AC006130, AL035587, AL021920, Z86990, AC005057, AC007324, AL049843, AC005215, AL021528, AL079295, AC008101, AC004150, AC000026, AC006160, Z83826, AC005081, AL080243, AL133485, AC002492, AC002331, AC007707, AC005512, U91326, AC002477, AC005919, AF030876, AC002330, AP000143, AL021658, AC002059, AC007344, AC005412, AFE196779, AC006019, AL022476, AC005701, D87675, and AP000090.
HSYAU07	7417	953032	1 - 658	AA66395, AL016892, AA773310, AA666419, AW117831, AA668617, AW069744, AA864910, H70254, H83988, AF037222, AC004913, AC004791, AL121825, AL078639, and AL022318.
HSYAF81	7418	493771	1 - 499	AA994578, AL370475, AW131315, AL037910, AW082117, AL036283, AA603323, AL021467, AW301350, AW303196, AA878149, AW274078, AW406755, A1810236, N22032, AL045709, A1963720, AL090893, AL135698, AL225206, AL038606, AW274349, H45320, AA808263,

AA468322, A1865213, A1039187, A1037632, A1890348, A1343143, A449997, A1862877, A1984263, A1273107, A1715706, A1041924, A1814778, A1947375, A1715814, A1845815, A1079734, A1857486, A1865330, A1870197, A1079834, A1925653, A1041375, A1877109, W23546, A18827231, A1039471, A1120976, A1061313, A1079129, A1623899, A1609972, A1828408, A1041083, A1121210, A1821881, A1821918, A1859946, A1537995, A18492313, A1533408, A155246, A1923052, A1877817, A10410788, A185019, A155232, A1037952, A1801701, A1039530, A1282479, A1042756, A1040072, A146474, A1601680, T17269, A1865905, P29989, A1503258, A1857296, A1813795, A1661948, A18726435, A1284583, A1754013, A1048925, A1871904, A1814578, A1019973, A1754923, A17402458, A18127916, A18727171, A1120579, A189278, A1802045, A1004584, A1004519, A1916969, A1001530, A1004796, A1005921, A1004894, A1002045, A1004584, A1004519, A1916969, A1001530, A1002039, A1008372, A1015720, A1109963, A1006561, A1229041, U91326, Z98051, A1004068, A1005755, A1022313, A1024498, A1000959, A1050338, A1005254, A1005280, A1000346, Z85996, A1002544, A1004236, A1078639, A1005138, A1006285, A1005971, A1005291, A1003682, A1006138, A1005189, A1001549, A1008101, A1005192, A1035587, U95742, A1007221, A1005520, A1005598, A1003832, A1005037, A1004067, A1034399, A1021707, A1004472, A1004815, A1001228, A1003043, A1035400, A1005004, A1007917, A1004253, A1002375, Z99716, A1010197, A1009516, A1020997, A1004938, A1008718, A1122020, A1031433, A1005555, A1006120, A1121603, A1005875, A1005571, A1008382, A1031055, A10016025, A1023803, A1035694, A1007216, A1005277, A1015722, A1004386, Z98742, U95743, A1006241, A1005585, A1005393, A1005013, A1005046, A1005386, A1004668, A1004821, A1004797, U96629, A1003962, A1035072, A1003626, A1004024, A1049829, A1008040, A1005071, A1006211, A1005029, A1005378, Z83846, A1004148, A1031005, A1126403, A1009464, A1004590, A1022097, A1008721, A1002288, A1031286, A1004596, Y18000, A1035089, A1035683, A1004476, Z98304, A1016830, L11910, A1136295, Z85987, A1007546, A1005288, A1031281, A1004890, A1016027, A1022318, A1004887, A1009181, A1000553, A1005007, A1003051, A1004538, A1050308, Z98950, A1005245, A1080286, Z82194, A1005972, A1007536, A1109802, Z82215, A1005856, A1005259, A1002527, A1006390, A113246, Z84483, A1006896, A1004098, A1004448, A1007731, A1006318, A1006952, A1005500, A1117337, A1137100, A1020996, A1008498, A1008729, A1006204, A1005701, A1136501, A1031132, A1002223, A1008012, A1004534, A1006997, A1022238, A1020663, A10011331, D83253, A1002418, A1007276, A1003147, A1007191, A1004526, A1007324, Z93017, A1096817, A1000073, A1006532, A1002301, A1009399, A1004954, A1007458, A1002470, A1133163, A1031904, A1005839, A1009248, A1110502, Z69917, A1002036, A1005826, U85195, A1055588, A1031667, A1008085, A1005699, A1067844, A1004491, A1020870, A1000514, A1000356, A1023879, A1005220, A1006379, A1005274, A1024495, A1051976, A1005821, A1006480, A1049694, A1008079, A1000658,				
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HSMBD15	7419	659891	1 - 407	15 - 421	AC005488, AC007386, AL035541, AC006312, AC005548, AC002891, AC000112, AC002351, AC005562, AC005477, AC003107, AL034417, AP000474, Z97054, AL096791, U95740, Z82901, AC007298, AC004967, AC006133, AL135960, AL131016, AL008633, AC004934, AL034394, AC007055, AL021395, AC004019, and AC004477.
HSMBBC78	7420	917244	1 - 644	15 - 658	N34175, AA461238, AL092575, and AA331823.
				15 - 658	AA393439, N63936, AW197010, AA460782, A1092889, A1979040, AW197137, AA557383, AA411820, AL150862, AL023305, AL1373812, A1654759, AAG28727, AW071028, AW104069, AL146710, AL241449, A1379435, A1189274, A1635068, H99871, AL038814, A4918973, AA330584, AL278070, AL079427, AL079456, A1962441, T60742, W22792, A1354806, AW190745, AL042557, AW316719, A1262577, N74491, A1564832, H49267, AA737070, AA707017, AA262472, AA400871, AA844055, AA292705, N22135, AA659903, A1275831, R98400, R37266, AA151662, N68298, AL222529, D12311, AA321005, A1194059, W03193, AL027104, F09558, AH01786, AA534228, F10196, AA327628, D12306, N62683, A1422779, T65152, AL243057, AL197916, N35723, T89270, R37372, F09567, AA401639, T84342, N28556, AA804442, and AC002400.
HSMBBA83	7421	780932	1 - 412	15 - 426	N48782, and AW148806.
HSMBBA39	7422	715630	1 - 349	15 - 363	A1420669, A1421859, and AC004839.
HSBAZ069	7423	754362	1 - 409	15 - 423	R69952.
HSBAZP83	7424	780400	1 - 496	15 - 510	AA018350.
HSBAZP65	7425	747422	1 - 333	15 - 347	R34942.
HSAZI64	7426	746074	1 - 505	15 - 519	N49506.
HSAZI53	7427	727757	1 - 325	15 - 339	T84311, T83011, T85193, and T90202.
HSAZG52	7428	726195	1 - 470	15 - 484	H03394, and H04091.
HSAZG23	7429	950023	1 - 453	15 - 467	T96724, AA701886, T96613, AL133245, and AL121653.
HSAAZ42	7430	866817	1 - 315	15 - 329	AC002430, AC007384, AL031311, AC007686, AC003070, AC002470, AL031651, AC005280, AL133448, AP000045, Z95114, AC005338, and AC004815.
HSAAZ39	7431	705365	1 - 504	15 - 518	AA082591, AC002542, and AC005495.
HSAAZ06	7432	935451	1 - 351	15 - 365	HS0833.
HSAY137	7433	708803	1 - 408	15 - 422	AA501933.
HSAY129	7434	866821	1 - 732	15 - 746	R98708.
HSAYR63	7435	744333	1 - 414	15 - 428	R21904, R81864, and H04638.
HSAYO42	7436	713793	1 - 457	15 - 471	AA033946, A1655064, A4678327, AA033996, T89763, AA748095, AA554593, AW075801, AA033945, R85174, A1222713, AA873521, and AC004924.
HSAYK93	7437	791546	1 - 680	15 - 694	H79295.
HSAXS16	7438	661933	1 - 391	15 - 405	AA706695, AL187148, T57767, AA565911, AA723299, AA808861, AL1361866, AA503298,
HSAXM08	7439	866838	1 - 785	15 - 799	

AA775205, AI921765, AA812684, AF001549, AC005736, AC005081, AC004797, U62293, U63721, AP000505, AP000501, AC004990, AC005488, Y14768, AC005730, AC007637, AC005057, AC004991, AC006441, AL031311, AL0049759, AC005529, AC006505, AC005261, AC007193, AC002301, AC004253, U95740, Z95115, AL049759, AC005562, AL096701, AL034420, AL049843, AL034379, Z85987, AC007993, AC004655, AF030876, AL031228, AL109865, AC005486, AF190465, AL031291, U91321, AC002558, AC006509, AF196969, AL022316, AL122020, AF031078, AC002544, AC004084, AC005082, Z84466, AC004383, AC002115, AF196779, AC002400, AC005821, AL031295, AC002316, AC006965, AL096791, AC006014, AC005288, AL031602, AL021154, AC007707, AC002350, AL133448, AP000555, AL035415, AC006241, AL033527, U62317, AC005015, AC006430, AC005740, U07562, M63796, AC006077, AC005071, AL034549, AC006312, Z84484, AC000025, AC007327, AC003684, AL020995, AC006487, AC006948, AF038458, Z99716, AC005527, AC003649, AC016027, AC006011, AL049766, AC004805, AL003147, U91326, AL022326, AC004417, AL080243, AL132777, Z83822, AC005484, AC004841, AL031276, AC004491, U91318, AC006211, AF111667, AC004876, AC004263, AL049539, AP000692, U47924, AC005067, AC004099, AC007226, AC004983, AC006480, AC000003, AC005696, AC003108, AC016025, AC005911, AL050348, AC004859, AC004067, AC003006, AC004223, AC003010, AL133500, AC005971, AC004167, AC005632, AC016830, AC004616, AC007216, AC006236, AL135744, AC010205, U91323, AL008627, AP000694, Z97353, AL132712, AL031587, Z83844, AC007277, AC006597, AL049697, AC002369, AL023807, AL109758, AC004815, AC009247, AL035400, AC005764, AC006468, AL021394, AL009181, AC005089, AC004967, AC009516, AC006101, U80017, AC006088, AC005274, AC006538, AC002395, AL133355, AC004819, AC004675, Z97054, AC000159, AC005722, AC002091, AC002310, AL031848, AC004033, AC002477, AL049757, AC011456, AC005031, AL050318, AC006115, AC012330, AC004031, AC004534, AC004150, AC005011, AL035681, Z99570, AC005295, AC003109, AL133353, AP000088, Z98036, AC005899, AC004975, AC004821, AC007055, AC005332, AC007731, AB023049, AC005482, AC005500, AP000031, AC005072, AC004834, AC005280, AC004020, AF109907, AC007227, AL022476, AC007263, AP000696, AC002425, AF088219, Z83826, AL049872, AL096767, AL021917, AL035450, AC002314, and AC002070.	
HISAXD95 7440 721825 1 - 547 13 - 561	H23534, A6649201, AA972098, AA743722, AA292515, and AA884319.
HISAXI03 7441 792516 1 - 440 13 - 454	W31014, and W27097
HISAXI05 7442 932387 1 - 492 13 - 506	N50573, A983229, AW149004, AC012627, and AC004004.
HISAXI85 7443 784475 1 - 200 13 - 214	N72959.
HISAXG45 7444 457077 1 - 357 13 - 371	N48850.
HISAXE42 7445 714040 1 - 358 13 - 372	H23933, A1111184, and H46840.
HISAXE33 7446 702673 1 - 413 13 - 427	H53383.
HISAXC55 7447 732368 1 - 470 13 - 484	N71589.

HSAXB89	7448	787069	1 - 210	15 - 224	AI440512, AA001386, and AC008038.
HSAXV92	7449	792888	1 - 649	15 - 663	T85565, W83924, W89181, AL047407, and T85566.
HSAXW81	7450	574184	1 - 432	15 - 446	F30650, AU215429, AJA995373, AA664126, H51835, H29914, AA553409, AA456149, AA643784, AA482928, T06210, AW270385, A1750125, A1283938, AA633424, AA230155, AA584765, AW238498, T03900, AW131417, AW341978, A1628859, AA577824, AA833828, AW103406, A1366555, AA458534, H93152, A1180857, AA147521, A1229935, AA808998, AA659832, AW008184, AA43727, A1251024, N27753, A111168, U07562, AC005520, AC005971, AC007565, AC003042, AC005512, A109627, AC007546, AC002369, AL049697, AL049766, AC004263, AC005803, AL008718, AL020997, AL031230, AL022313, Z84487, AL133382, AC005377, AL109758, AC004242, U73168, AL020993, AB003151, AC003982, AL121748, AC002554, AC002365, AC004099, AL031005, AL049874, AC004821, AC005666, AL022726, AL049872, AC005480, AC002549, AC005102, AP000501, AP000255, Z99716, AC005300, AC005632, AC012083, AP000688, AC005746, AC005335, U96629, Z85986, AC005081, AC003070, AL096791, AC000025, AL008719, AC002330, AC005037, AC016830, AC004969, AC003109, AC006441, AL133243, AL109963, AC005696, Z77852, AC002091, AC004929, AC006312, AL050348, AC005920, AC005375, AP000213, AC002565, AL035072, AC003098, AC004859, AC004000, AL049830, AC006057, Z98304, AC002558, AP000135, AC002094, AF134726, AL021707, AC004770, AC004895, AL031680, AC009336, AC005258, AL121825, AC007536, AL033392, AF047825, AC006120, AP001052, AC005088, U91326, AL021393, AC007216, AP000499, AC002544, AC004019, AC004228, AL003147, AC016025, AC007666, AC004678, AC004520, Z95132, AL135744, AC007785, U02051, AC007510, AP000031, AC005332, AC011311, AC003887, AL133371, AC005899, AC007731, AC004551, Z83840, AL008726, AC005500, AC005231, AL121652, AC002425, Z93783, AL049776, AL049843, AP000547, AL008582, U82828, Z98742, AL031281, U95742, U63721, AL109657, AC004049, AL050341, AC005291, AC004253, AL034418, AC006480, AC016027, AC004814, AC007066, AC002301, AL049760, AC006333, AL022165, AC006011, AP000553, AC005189, AL049757, AC004583, Z98950, AC000379, AC004167, AC003010, AC006111, AC006006, AC003043, AC005736, AC009516, Z84469, AC006121, AL050307, AL096703, AC003104, AF139813, AL133448, AL133163, AC004098, AC006241, AC009247, AC005237, AB026898, AC004655, Y14768, AF109907, AC005031, AL031118, AC004764, AC004602, AC010170, AL021977, AC005488, AL035071, AC005527, AC003108, AF196970, AL021591, AC006014, AL109952, AC008015, Z86090, AC007773, AC005070, AP000505, AC012384, AF031078, AL031432, AP000557, AC008372, AC002316, AC006285, AF030876, AC004491, AC004509, AP036572, U91328, AL022334, AL133445, Z97054, AC005013, AC005048, AC002318, Z83847, U91323, U80017, X69907, AC006449, AL118516, AC005280, AP000133, U91327, AL049795, AC007537, AC005363, AP000211, AC007845, AL021546, AL022101, AC005837, AP000692, AP000121, and AC006313.

HSAWY79	7451	574182	1 - 356	15 - 370	AA214655, AC004815, AC004975, AC007388, AC004491, and AC004991. AA38990, AL135377, AF754544, AL120008, AA633892, AL043217, C14967, R73754. AA584482, HA5136, AF773302, AL120004, AA481445, AC006121, AC005512, AC005924, AP000513, AC005244, AL031311, AC005200, AC005015, AC004841, AC005081, Z98950, AC006468, AL035079, Z79997, U91326, AC005793, AL120200, AC005071, AP000356, AL022318, AC002115, AC007055, AL009179, Z93930, AC003071, AC007201, AL133246, AC005220, AC004771, AC004755, AF001548, AL007861, AL009181, AC007226, AF053356, AL022238, AL021707, AC005944, AF111169, AL096712, AL031680, AC005355, AL135744, AC004084, AF001549, AC005529, AL031597, AC005755, AC004531, U07563, AL031589, AC002310, AC006449, AC004228, AP000692, AC004922, AL022165, AC005527, AP000553, AL121603, AC003101, AF196971, AC005667, AC005412, AF207550, Z98742, AC005004, AC005280, AL031291, AP000348, AC005932, AC005257, AC005484, AC002984, AP000503, AC004475, AL049694, AC007314, AC005057, AC003839, Z83840, AC005837, AC000379, AC005207, AC004031, AC004000, AL096701, AC003029, AC006064, AC007421, AC007676, AP000445, AC004143, AC005736, AC004878, AL033521, Z82208, AL024507, AC004805, AC004966, U95742, AC004033, AC005233, U96629, U91323, AC006480, AC007057, AL109952, AC006930, AC004167, AC007686, AC005193, U52111, AJ246003, AD000092, Z98946, AC005619, AC005567, AC002347, AP000030, AP000260, AC004797, AC005049, U91325, AF111168, Z84721, U62293, AC002550, AL022322, AC020663, Z98048, AC005940, AC006071, AC004854, AL008582, AC004707, AC007842, AL009183, AC002369, AL035422, AC005225, AJ011930, AC007666, AC004851, AL034420, AC006511, AL049776, Z83843, AL031282, AC002091, AC016027, AC004526, AC004034, AC007216, AP000248, AC005231, AC002312, AC006132, AC009509, AC016830, AC005695, AC002395, AC002316, AC003665, AL021154, AL050308, AC004991, AP000074, AC005632, AC005899, AF1239756, AC007506, AF196972, AC005803, AC004079, AC004491, AL031591, AL031685, AC005756, Z98750, AL049697, AC004686, AL109980, AC005391, Z93241, AC008040, AF165926, AC018633, Z999716, AC005519, AC003070, U85193, L78833, Z93017, AC003663, AC005482, AC009247, AL133448, AC004834, AP000555, Z94056, AC012384, AL022237, AC007263, AL031587, AC005668, AC005730, AL049760, AL121655, AC004638, AL021155, AP000099, AC005786, AC004099, AC004816, AC004770, AC006088, AL049780, AC005180, AL034548, AC007845, AL135783, AC006023, AC004409, AC005089, AC005332, AC004659, AL022476, AC016025, AC005701, Z97876, AC004257, AL049757, AP000275, and AP000113. R18910, AA758341, AA861341, AA992385, AL066599, AA393305, AA626371, AL083008, and AF199339.
HSAWY74	7454	765818	1 - 117	15 - 131	
HSAWU12	7455	968804	1 - 464	15 - 478	



HSASW574	7456	765819	1 - 541	15 - 555	AA180526, AB937121, AL566831, and AW451269.
HSASW540	7457	771441	1 - 386	15 - 400	T72682.
HSASW808	7458	959943	1 - 584	15 - 598	AA725543, AA770210, AA700020, AW206059, AL672358, AA916774, AA699619, AA827289, AW723123, N59203, AL024492, AL032726, AG693821, ALD40892, AA767810, AA291268, AA524731, AA765847, AL020858, AL032993, AL049580, AL375573, AL684175, AL188629, W42659, AA993418, AL334247, AL524794, AL215039, AA287974, AA782458, AL824282, AW362905, AA426229, AL796476, AL500031, AA525966, AW021687, AA730421, AA262040, AL613496, R60802, AL769274, AW383419, H18939, AA291339, AL701999, AL797031, AA908871, AA480957, AA235431, AA370678, AA504437, AA626831, AA659009, H51642, H50988, AA664580, W45184, AA203299, AA259009, AA504201, AA778342, AA746717, AA327714, and AL110271.
HSASW008	7459	959938	1 - 531	15 - 545	AA665641, AL370010, and AA620852.
HSASWL77	7460	772444	1 - 611	15 - 625	H38048, H47680, R89374, T96702, T96595, and AC003663.
HSASWL68	7461	753569	1 - 441	15 - 455	W19521, and H30845.
HSASWK67	7462	526767	1 - 348	15 - 362	AL027141, AL833186, AL885553, AW362249, AA775877, AA586887, AL870575, AC002558, AC007934, Z80774, AL109963, AL034423, AL109801, AL035454, AL133353, AC006361, AC009516, AF045555, AL049794, AC005081, AC006241, and AC004848.
HSASWK32	7463	418690	1 - 293	15 - 307	
HSASWK21	7464	954897	1 - 408	15 - 422	
HSASWK20	7465	866872	1 - 419	15 - 433	
HSASW113	7466	971727	1 - 635	15 - 649	AA098930, AL1018279, and AC007036.
HSASW111	7467	964949	1 - 333	15 - 347	R36512.
HSASWG44	7468	716820	1 - 560	15 - 574	H56598, H56599, and AA528438.
HSASWF86	7469	675220	1 - 249	15 - 263	H71860, AA091228, and AC000015.
HSASWF52	7470	728598	1 - 326	15 - 340	H85407, and AL373600.
HSASWD34	7471	706928	1 - 459	15 - 473	N39811.
HSASWD24	7472	677435	1 - 222	15 - 236	R02372, AL130993, AA573647, and AL375038.
HSASWD15	7473	660572	1 - 490	15 - 504	H08501, Z41986, and AC008039.
HSASWC55	7474	866890	1 - 725	15 - 739	T61478, AA487542, U07000, AL121934, AC004966, AC003035, AL023580, AP000550, AC002051, AC008018, AL031432, AL022400, AC007664, AC007298, AC007325, AC004814, AC003043, AL031674, AC007324, AP000552, U50871, AC009288, AC012330, Z98941, AL049712, AL121825, AL024509, AP000694, AL022171, AC007798, AL079342, AC006948, AC004659, AC007981, AP000347, AC005841, AL031291, AC005477, AL021391, AC004491, AL110122, AC004765, AC009399, and AC005697.
HSASWB70	7475	757409	1 - 156	15 - 170	R01017, AA043219, AL920902, AA283874, AA833856, AA833870, and H66742.
HSASW282	7476	881166	1 - 362	15 - 376	H73704.

HSAV263	7477	574195	1 - 360	15 - 374	AA158018,
HSAV10	7478	968230	1 - 285	15 - 299	AD78820, AA838103, AL267216, AL267490, and AC005856.
HSAV102	7479	920721	1 - 409	15 - 423	T78806, and AL049631.
HSAVX22	7480	674919	1 - 290	15 - 304	H71423, and H71422.
HSAVW13	7481	862754	1 - 344	15 - 358	H57122, and T40775.
HSAVV36	7482	866886	1 - 512	15 - 526	H30216
HSAVS48	7483	721856	1 - 279	15 - 293	AA192605, AW014772, AL680874, AW243066, AA192606, AL697110, AA677245, AA614646, AW205594, AL270685, AA830046, AA388738, AL476751, AA862842, T91778, AA906049, AA622890, A66648, and AL109983.
HSAVO73	7484	929276	1 - 681	15 - 695	RI0034.
HSAVP56	7485	733616	1 - 355	15 - 369	AA639443, and AP001052.
HSAVO05	7486	932379	1 - 253	15 - 267	N70411, and R97430.
HSAVN72	7487	574129	1 - 483	15 - 497	N7021399, AW020094, AL724583, AL610012, AL609984, AA568311, AA425283, AA660238, AA601336, AW17869, AW265006, AL803771, AA565338, AA551519, H71678, AA553366, AL119691, AA085106, AL433952, AL079553, AB92885, AL909130, AL040313, AL910609, AA568303, R43331, AL832782, AL431232, AL048267, AA493464, AL572680, AA423864, AA831714, X62335, AL136295, AC004802, AL008716, Z81367, AL096703, Z86511, AL121603, AC007421, AP000116, L78810, AL109627, AC006455, AC009516, AC003018, AL1049694, AC006211, AC006449, AP000553, AC004812, AC002558, AC003553, U47924, AC006071, AL034420, Z93241, AC005779, AC005015, AC006277, AL096701, AC005740, AC004973, AC004134, AL022316, AC007364, AC004098, AC006581, AL035422, AL035400, AC005387, AL096801, AL050341, AC004686, AC006077, AC005899, AC004921, AC005180, AC006011, AC002045, AL133448, AC010077, AC004703, AC006312, AC005006, AC006141, Z95115, AF030876, AC005753, AC008014, AC005954, Z86090, AF000472, AL031255, AP001235, AC004813, AC005921, Z97053, AL080243, AL035086, AC002316, AF207550, AC001131, AL031673, AC004447, Z81364, AL096791, AC002519, AC0066480, AL135744, AC005231, AC006512, AL001657, AC007055, AP000504, AL035423, AC005856, AL031587, AC005325, AL139054, AF031076, AC004897, AF031078, AP000248, AC007191, AC005695, AC005291, U78027, AC005736, AL031281, AC005971, AL034430, AC004685, AP000556, AB001523, AC008115, AL0088719, Z83844, AC006511, AC007934, AL021878, AC004648, AC007450, AL035681, AL004859, AC004526, AL078477, AF129756, AC009510, AC006241, AL031315, AC007919, Z82198, AC005668, AC006530, AC005726, L78833, AC004448, AL117338, AC007225, AC005253, AC005785, AC004650, U24498, AC005846, AC004878, AF000696, AC004848, Z84476, AL096766, AC002470, U73634, AC015853, AC005365, AC003029, AC004033, AC002391, L39891, AC003042, AC007283, AL022318, AC005701, U89336,

HSANV24	7489	574106	1 - 265	15 - 279	AC007160, AC007537, AC005696, AC007308, AF003356, AC004675, AC004834, AC004974, AC004228, AP000501, AC002077, AC009247, AP000557, AC005839, AC006088, AL0049780, AP000503, AC006026, AL008718, AC002115, AL0049869, AF000172, AC006042, AL034423, AL132777, Z499178, AC005071, AC003147, AP000057, AL0049709, AL035420, AP000008, AL133670, AC002476, Z844480, AL031311, AF088219, K00061, AP000704, AC004030, Z98051, AF001530, AC001226, AL021707, AF045555, AC005207, AC005874, AF134471, AC005529, AC005228, AC004963, AF111167, AF002546, AC006571, AC007637, AL096763, AC0052310, L05367, AC005081, AC007021, AP000359, AC004910, AL020995, Z97054, AC003110, AC005320, AL109628, Z84469, AC004491, AC031362, AC005763, AL031767, AC005911, AL121653, AC007051, AC006285, M63796, AC005664, AL031577, AC016027, AC004887, AL023575, AL031059, AF196972, AC003996, AC004797, and AC005933.
HSANV24	7489	574106	1 - 265	15 - 279	
HSAYK84	7490	783183	1 - 476	15 - 490	AL023999, T89881, AL719157, and Z83309.
HSAYB384	7491	783182	1 - 470	15 - 454	AA626210, AA0678261, AL458275, T86534, H96885, H61936, AL247794, W87937, T78644, and AL1217194.
HSAYI83	7492	728361	1 - 209	15 - 223	T89682, AA905799, AA730277, AW136642, T40726, and AA806155.
HSAYG96	7493	796544	1 - 365	15 - 379	H88813, and AC005876.
HSAYF17	7494	664515	1 - 340	15 - 354	H80433, AA744622, AL688897, and AA834656.
HSAYE61	7495	742076	1 - 446	15 - 460	T89135.
HSAYV89	7496	781800	1 - 282	15 - 296	AA039815, AA091607, and AL035410.
HSAYV42	7497	674977	1 - 288	15 - 302	T97088, and AA639076.
HSAYU211	7498	697609	1 - 357	15 - 371	AA262765, and AL031005.
HSAYU24	7499	679279	1 - 525	15 - 539	H95291.
HSAYU25	7500	679278	1 - 875	15 - 889	N63710, H86619, AA0400277, W902711, N99081, AL078221, W86692, AA148985, AA148984, AA031367, and H90568.
HSAYQ81	7501	866192	1 - 435	15 - 449	F35097, AL0737098, AA644090, AW27138, AW023111, AA564862, AW410409, AA574077, AA225406, A9271765, AV727294, AW328331, AA904211, AA425992, W96277, AW028376, AL635028, AA740559, AT755202, AL066646, AL275742, AL001505, AL0249365, AV084100, AL145934, AL923451, AL046416, AL773463, AL144081, AV302711, AA513851, AL869426, AL439525, AA828637, AL923458, AL427636, AL137372, AL1587467, AL0453077, AA570255, AL671714, AW301906, AW103406, AA020873, AA683052, AL955029, AA254616, H63660, AA847395, AL243789, AL921744, AL356440, AL523074, AA568747, AL627917, N57681, AC007226, AF159056, AC007398, AC0066720, AF196969, Z835986, AP000692, AL136295, AC006530, AC005184, AP000553, AL0049780, AC005726, AR036572, U91328, AL031368, AL035659, AL050307, Z95115, AC005972, AL133243, AL121655, U91321, AC004526, AL133289, AL0031284, AL049636, AC009599, U47924, AC005971, AC005982.

HS AUQ34	7502	730928	1 - 402	15 - 416	H49169, AC004890, AL109798, AC005412, AC002996, AC004491, AC007225, AC004534, AL078581, Y14768, AC005011, AL022327, AC005231, AC007055, AC005722, L44140, AF000967, AL133448, AC009181, AC002470, AL049631, AC006333, AP000505, AC007193, AC005082, AL121603, AC005666, AC005338, AC006449, AL133244, AC007934, AC003663, AL034420, AC005962, AC003041, AL109637, AC003043, L78810, AC007637, AC006347, AF000501, AP000356, AC004854, AL078638, AL031846, AC007216, AL049757, AC005095, AC005839, D87009, AC005409, AL122023, AC005529, AL123355, AL035587, AC005057, AC005100, AE000638, AL022162, AL109738, AP005552, AF069489, AP005555, AC004821, AL049843, AC005071, AF001549, AC002476, AL050318, AC004820, AL022315, AC000025, Z09716, AC002312, AC002551, AC004755, AL049538, AL024508, Z85987, AC006006, AL021940, AC006040, U15177, AC005288, U91323, AC004647, AF134726, AC002492, AC005899, AP000208, AC007384, AC007766, AL008726, AL049776, AC005399, AP000247, AC038458, AF205588, AC004099, AC002472, U91326, AC007371, AC004883, AC000159, AL022163, AL121754, AC005566, AC005920, AC004972, AC005480, AL050321, AC005527, AC005736, AC011311, AC004878, AB026898, AC004655, AL133382, AC004033, AL031584, AC004953, AC007546, AC006360, AF196972, AC007938, AC005531, AC006084, AL049869, AC002091, AC002404, AC002480, U80017, AP000032, AC008038, AL022476, U95743, AF045555, AC004989, AP000131, AC002330, AP000046, AP000114, AC006441, AL009051, Z82244, AC005233, AC009247, AC002395, AC005874, AF134471, AL121658, AL133246, AC016025, Z98750, AF064861, AC004651, AC007993, AC005841, AC005519, AL079342, Z84469, AC004865, AP000086, AL078639, AL021154, AL021546, AC002303, AC004216, AL049829, AC005829, AC003101, AL024498, AC004797, AF107885, AL109827, AL031228, AC007151, AL022320, AL034417, AL007934, AC006115, AC005387, AC007011, AF207550, AC002119, Z98044, AC004263, AP000048, AC006285, AP000193, AC006312, AC005363, AD001527, AC002544, AL035089, AC005189, AL031276, U62293, AL121595, AC008372, AC002301, AC004895, AL034379, AC005486, AC005330, AL049856, AL022165, AF053356, AC002300, AL035420, AC004477, AC006468, AC003071, AF165926, and AC005520.
HS AUQ34	7502	730928	1 - 402	15 - 416	H49169.
HS AUQ44	7503	716847	1 - 342	15 - 356	R23067, and AC004752.
HS AUH84	7504	908440	1 - 356	15 - 370	AL267359, and M77994.
HS AUH72	7505	766240	1 - 267	15 - 281	AA179592.
HS AUH48	7506	883205	1 - 400	15 - 414	
HS AUH23	7507	422961	1 - 719	15 - 733	N40665, AW404068, AA461610, AA429180, W25197, AA306808, AA329256, AA304978, H95186, AA38381, and AW405457.
HS AUH06	7508	954543	1 - 413	15 - 427	AW139651, AW134619, T77738, and AA668754.
HS AUH02	7509	917314	1 - 324	15 - 338	AA485628.
HS AUG74	7510	765859	1 - 563	15 - 577	AA774114, AA001307, U51281, and AC001228.
					AW300097, N33037, AW293539, and W57798.

HSAUD02	7511	920827	1 - 446	15 - 460	N70288
HSAUB69	7512	514840	1 - 650	15 - 664	AA077777, AA354695, AB357976, AB090334, AC019014, AC060204, AJ251973, AC005940, AL050331, AL009172, Z95304, AC007207, AC005911, AC006042, AL023374, AC004832, AL020667, AL022726, AC005611, AC003684, AL050317, AC007172, AL132777, AL049839, AC000056, AC005354, Z83383, AL121658, AL109984, AP000140, AC003098, AL034420, AL049869, AP000088, Z97876, AL021391, AP001549, AC005740, AC0012384, Z82206, AL035387, AC005091, AC005067, AC004386, AC003568, AJ246003, AL1231799, AP000336, AL135744, AF007550, AF015416, AC005399, AC000553, AC005304, AL133163, AL109939, AC006538, AL049611, AP000553, AL049843, AL031311, AC006057, AC006101, AC005215, U98335, AL078624, AL078593, AL020997, AC006160, AC005844, AC005243, and Z97055.
HSAUB39	7513	705677	1 - 400	15 - 414	T96309, AA526387, AL804853, AB18557, and AA935065.
HSAUTZ81	7514	778268	1 - 348	15 - 362	H83787, H80779, AL741246, AL261722, AF017104, and AC016831.
HSAUTV22	7515	674986	1 - 389	15 - 403	AA906177, W93403, AA889552, AA889547, AA757340, AL478954, AA906247, AL380565, and AL018570.
HSAUTW91	7516	790394	1 - 328	15 - 342	T98737.
HSAUTW51	7517	725879	1 - 538	15 - 552	H99808.
HSAUTV96	7518	843424	1 - 757	15 - 771	T91873, T84748, AL122618, AA535216, AL884383, AL078638, AP000356, AC005881, AP000128, AP000206, AF000245, AC005225, AC006213, AC004834, AC004216, AC005386, Z68870, AL01602, AL019635, AC004685, AC006449, AC004832, AL022318, AC005233, AC005200, AC005088, AC004967, AC008038, AL031707, AC006205, AC004067, Y07848, AC002492, AC002546, AC002470, Z85986, AF030453, AC004913, AL049776, AL033375, Z95114, AC006285, AC005971, AC006597, AD001502, AC005920, AC000353, and Z98047.
HSAT325	7519	866949	1 - 748	15 - 762	AA504782, AA884955, AA486877, AC004212, AB023050, AP000512, and AF124523.
HSAT055	7520	732406	1 - 467	15 - 481	R01471, AA191495, AW272663, AA112291, and AC003969.
HSATM64	7521	862436	1 - 1029	15 - 1043	AA074625, AA103341, N79094, N81127, AA010342, AL275020, N62337, AL039035, AA082546, AL632888, AL472260, AL472195, AL003958, W73513, AA234358, AA025769, AA905994, AA5977248, AA948588, AA054472, W66348, AL143305, AA922107, AA452878, AL127716, W72476, AL094271, AL589650, W69905, AL216500, AW340339, AL088782, AW051110, AL127337, AL338418, AA722405, AL568823, AL200456, AL659289, AL371712, AL204689, AL243708, AW027897, AL017294, AA593504, AL249161, AW182660, AL351592, AW138347, AL971471, AL189735, AA548686, AL306414, AL420134, AL240611, AA026541, AA595328, C00837, AA041253, AU918959, W68440, AL973316, AL905618, AA877132, AL167501, AL161103, AA905960, AL190826, AA885421, W73344, AA025957, AA341160, P22309, AA460691, W76192, N57271, AA453048, AA779639, and AL873146.
HSATM19	7522	866954	1 - 434	15 - 448	H83017.
HSATM09	7523	456326	1 - 337	15 - 351	T94905, and AF017104.

HSATL02	7524	920825	1 - 488	15 - 502	AA468269, AA468298, and AA468196,
HSAT158	7525	866955	1 - 499	15 - 513	AJ336563, AW702011, and AW271091.
HSAT153	7526	728414	1 - 436	15 - 450	T91431, H80874, H53035, and AP009894.
HSATC79	7527	602167	1 - 859	15 - 873	N23278, A1278972, AA679625, AW157731, A1871954, AA410788, AA744018, AW023111, A1251429, AA228778, AA439393, AA715173, A17715075, A1798407, A1066646, A1206481, A1340151, AA535216, AA115863, AA449997, A1189682, AA558404, AA501867, A1060296, AA598892, A1955029, A1923058, A1716604, F30158, A1207424, A1678867, AA644090, AA714011, A1431513, A1357628, AA572983, A1693366, A1564582, N26201, A1061313, A1755202, A1572680, A1471476, A1753488, A1884383, A1587583, A1587565, A1070899, AA491767, AA613624, C06046, AA084609, A1826761, AA622801, AA129746, A1216990, A1237767, A1969090, A1744830, AA09816, A1022934, A1356440, AA719433, A1341978, A1203651, A1186438, A1047349, A1355007, AW304536, AA148656, AA610433, A19404137, AA630535, AW104788, T57096, AA837000, AW148792, H93628, F29968, AW243884, AA252226, A1799569, A1925869, I47234, Z95114, AC004253, A1033327, A1031319, AP000045, AC004149, AC004967, AC007388, AF205588, AC004904, A117337, X60459, A1031683, Z69917, AP000300, AC004019, AF129756, AC000039, A121820, AC004232, AP001133, AC005327, AC004895, AC007917, AC003982, AC005690, U85195, AP005555, AC006512, AC005529, AC005330, A1246003, Z92546, A1008637, AC002563, A1000658, Z98884, Z84480, A121652, AF053356, AC002059, AC003108, AC000025, AP003353, AF196779, A1022316, A1031846, D84394, A1049643, AC004134, AF134728, AC003025, AC006511, AC005484, A1080243, AC005859, AF139813, AP000152, A1133289, AC007533, A1021393, AC004228, Z81364, AC004148, AC006512, I34294, U07562, AC010849, AC007533, A1021393, AC004228, Z81364, AC005081, A1031311, AC004996, AC005041, AC005015, AC005821, AC005856, I78810, AC007845, AC006449, AC020663, AC007688, A1049869, A1080317, A1024498, A1060262, AC005730, A1023375, A1050321, AC008394, AP000074, AC005911, U91321, AB020864, AC004694, AC004408, AC003007, AC006125, AC005088, AC004231, A1096773, A1133371, AC005971, A1031650, A1049776, A1023803, AC005531, AP005502, A1035072, AC005207, AC006079, AF047825, AP006692, AC002477, A1031230, AC004631, AC005280, AC005071, A1031295, AC004805, AF190465, AC005784, AC007421, AC000072, AC005409, AC005551, AC005632, AC002425, AC006121, D88270, AC004447, Z93930, U89337, A1078603, L77569, A1001527, Z94056, A1122020, AC004491, AC002501, AC005839, U72787, AC006627, A1022330, A1022238, AC004760, A1034429, AC005697, A1024507, A1031228, Z92976, AC004750, AC005043, AB014077, AC004685, AC005598, Z84466, AC006647, Y10196, AC006275, AC004031, AC004851, AC004598, AC005924, A1035587, A1133246, A1069791, AC007536, A1031680, AC009509, AC003002, AC004150, AC004032, A1021453, Z97876, A1049738, AC006473, AC005095, A1096701, Z95331, AP000193, A1117354, AC005874, AF134471, AF064726, A1022396, AC005156, A1121852, AC004517, A1034420, AC004209,

				AL035696, 298742, AC005736, AC006023, AC002365, AP000131, AP000209, AC002404, AC005288, AL049795, Z86090, AC005548, L78833, AP000117, AC006454, AL023353, AC009225, AC006277, AP000553, AC007151, AP000098, AC005324, AL021658, AC002544, AL002474, AC000378, AC007686, AC008033, AC005070, AL021546, AC003037, AL022323, AC006236, AC002316, AC005726, AC005304, AL022165, AL020307, AC016025, AF088219, AL117694, U96629, AC007192, AC004797, AC005406, AL122127, U47924, AC005064, AC004000, AF207550, Z97630, AC004263, AL109847, and AC004985.
HSA7C72	7528	761511	1 - 424	AL036730, AW021633, A1866854, and A1122279.
HPSAD92	7529	790524	1 - 419	R05270, AW044641, AL167940, AW057522, AA371645, and AL035652.
HPSAB26	7530	429558	1 - 324	AA371620, AA371621, A1868939, AA827231, AW263864, AA507169, AL037910, A1347810, AL673731, A1889923, AW080863, AA878149, AA526193, A1859834, AL150670, A1431434, A1433247, F32171, A1360514, A1127486, AA814510, AA437416, F17700, A1859946, A1049831, AW028908, H05073, AA557486, T17269, A1908093, AA857381, AA316122, A1327624, A1979005, A1120976, T40799, R92640, AA553448, A1343143, A62778, A1148656, AA830594, AA508873, T32050, A1216054, A1538812, AA528480, W23546, T05769, A1122223, A1538540, AA492313, A1582890, AA663966, A1251111, AW029576, A1252506, AA845659, T40612, A1569982, A1776298, A4297538, C14692, A1343113, A1623899, A19062724, A4279919, H58978, AA827978, AA515224, A19193493, A4702618, AA501614, AA837646, A832865, A1244254, AA916022, H57826, AA487542, AA769606, AA533408, N39097, A1079734, A1783911, AA347927, A19079809, A1821881, A1079129, AA720732, A1821918, AA716755, A1865213, A1473849, AA223249, AC005261, A1031846, AL008721, AC008498, AL033504, AP005032, AC006511, A134726, AL080243, AC005180, AC004019, U91326, AC004841, AC006077, AL022326, AC004033, A1031767, AL031255, Z99291, U95740, AC005393, AC004967, AC005332, AL022318, A1133246, AL031733, AC002543, A1033392, AC005837, Z85986, AL049766, AC002073, AC002544, AC004675, AC007876, A1031630, AC007055, AL022353, Z98036, AC002036, AC006445, AC005951, AC005102, AF088219, AC006023, AC005154, L32588, AL022163, U51560, U73638, AC005406, AC006538, A8016897, AF091512, A1133448, AF001550, Z80896, AC002425, AC006322, AC005057, A1031685, A1031274, AC002549, AC006016, AP000356, AC007346, AC006571, AC005878, AC005088, AF064861, AC002119, AC007565, AC000358, AC000052, D32202, AC009464, A1109623, AC004533, U62293, AC002418, A1022165, Z85987, A1110503, AC004996, AP000302, AC006127, A1049872, AP000549, AC006399, AF17829, AC007240, AC004386, AC005071, AC005037, AC005484, A18023051, AC006236, AC004878, AC006316, AC002045, AL049554, A1049641, AC007387, AC006013, A1035455, AC005082, AC002316, A1021706, AC004477, AC006398, AC002094, AC005740, AP000114, AP000046, AC007686, A1109829, A1033587, AC005197, AC003043, AC004659, AC005095, AF104670, AC005899, AC005551, AC005988, AC007934, AL035684, Z99716, L29766, AC002350, AC005004, AF188679, Z83846, AF107885,

HPSAB24	7531	518747	1 - 411	15 - 425	<p>AC003982, AL096712, AC005209, AC006283, U47924, AB020868, AC005325, AP003530, X71342, U51281, 282172, AF093016, AF196970, 299774, AC007381, AL1096701, AC005726, AC020663, AC004048, AC005702, US8675, AC005291, AC004622, AC006453, AC006539, AL121653, AL031848, AL121652, AC005091, AJ003147, AL031281, AC002477, AC005429, AL133245, AC004884, AC005932, AC004032, AC016025, AC007233, AL121769, AC005875, AC000134, AL121658, 297183, AF190631, 293023, 283838, AL109939, AL049776, AC005887, AL034417, AL008635, AL112203, AL021707, AC005755, AP004032, AL031230, AC005701, AL020995, AC005663, AC005839, AF001549, AL050332, AP000116, AL049546, AC005882, AC006166, U63834, AJ246003, AL023803, AC003029, AC005844, AC005768, AC003070, AC004859, AF207550, AL049830, 284480, AC007731, AC005255, AC005411, AL049589, AC005099, AL035089, AL049830, 284480, AC007731, AC005255, AC005411, AL049589, AC005099, AC002465, AC005771, AC008012, AP000512, AP000700, AC005632, AF201337, AF069291, AC002347, AC001228, AC007993, AC002420, AP000113, AB001523, AL008715, AC006552, AF111169, AL079340, and AL109963.</p> <p>AA371616, AA371617, AG26748, AW167330, AA468956, H07953, T74524, AW271069, AA501867, AD20552, AD24543, AA570740, AA483606, AW264901, AD251284, AD251034, AD251203, AA053463, AW408767, AA113126, AW703098, AD254770, W03333, AA568204, AD249853, AC006211, AL035587, AC002476, AC005488, AC005015, AL132712, AC005019, AF001550, AC002310, AC007774, AC005722, AC005940, AC002350, AC002303, AC004491, AE006658, AP000113, AC004216, AL109759, AL031295, AC006511, AC006599, AC005071, AL022316, AC005081, AL049759, AC005519, AL121658, AP000299, U83195, AC004148, AC004878, AC004966, AC007055, 283846, AF134726, AL031662, AP000553, AP000695, AL133448, AC003010, AC006014, AC004973, AL133245, AL022312, AC006088, AC002375, U95742, AL136295, AC005736, AC006126, AC004453, AL030996, AP000696, AC006441, AC006006, AC003982, AL023807, AC005324, AC004905, AC007371, AL109628, AC005291, AL031848, AC005529, AL050307, U91318, AC007536, AC005516, AB023049, AC005899, AC004000, AC007308, AC004099, AC004883, AC006387, AC007216, AL049653, AC004990, AC005527, AP000692, AL033327, AL021154, AL031588, AC005920, AP000045, AF003626, AF205588, AF053356, AC004876, AC005971, AC006449, AC005037, AC004024, AL109984, AF111168, AC003856, AC004797, AP000501, AC006115, AL009181, 295114, 297055, AL049646, AC007030, AF001549, AC006011, AC007938, AC002425, AP000552, AC009516, AF045555, AF001548, AL021579, 298304, AF129756, AL109627, AC006285, AC005231, AL022302, AL022326, AL035249, AL049794, AC003684, AC006064, AC007151, AC005482, AC005011, AL033659, AC003036, AC005377, AC004832, AC004815, AP000512, AL133246, AL022327, AC000353, AF196969, AC002470, AC006001, AC009509, AL133445, AC004985, U47924, AC005280, AC005962, AP000350, AC007011, AC004791, AC002480, AC007842, AL031276, AC004448, AC002126, AF001552, AC016025, AC005796, 284480, AL096791,</p>
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HPSAB15 HPSAA94	7532	503600	1 - 405	15 - 419	15 - 419	AC006077, AP000038, AC004025, AC007981, Z99716, ALI096712, ALI022334, and ALI139054, AA371610, R08528, R05340, and AC003070.
	7533	793000	1 - 480	15 - 494		
HPSAA93	7534	867387	1 - 603	15 - 617	15 - 617	AA371576, AA371575, R08031, N63131, AW088537, AW300749, R96650, AA665304, AA43131, ALI577222, ALI62442, AA809635, N71033, ALI251576, AW97815, ALI306232, AA833896, AA833875, ALI049653, Z98304, AC005921, AP001052, ALI080242, AC002425, AC005722, AC007283, AC007690, AC004659, Z95114, AC005529, AC004983, AP000692, AC005386, Z93024, AC003669, AC005821, AP000355, ALI031281, AC004841, AC005351, AC004099, ALI022316, AC005632, AC007406, AP000039, AC005261, AC006649, AC004216, AP000280, ALI133448, AP000555, AC002483, AC005015, Z83844, AP001107, ALI022326, AC002477, AF051976, ALI109984, ALI049829, AC004993, AC004106, ALI049709, AC005037, AF109907, U91328, AC004707, AC004985, AP000356, AR036572, ALI049776, AC005042, AC002352, ALI021579, Z99495, AC002350, AF111168, AC006101, AC005726, AC005042, AC004703, ALI050332, AC005088, AC002395, Z93023, AC004865, ALI022302, ALI009181, U62317, AC003108, ALI049856, AC004020, AB015355, AP000065, ALI022302, ALI009181, U62317, AP001549, AC002533, ALI033392, Z95115, Z83840, ALI021977, AC005527, AC006023, ALI049694, ALI031289, U91318, ALI049867, AC008040, AC007687, AC008101, AC003771, AC005839, ALI079342, AC005695, ALI034420, Z98048, X64467, AC000025, AC004526, AC005004, AC007630, AC005670, AC005914, AC002984, AD001527, ALI035079, AC005215, AC005520, ALI022313, AC005620, AC006121, AC004832, AF134726, Z99716, AC005740, AC004408, AC006057, L78833, ALI133353, AC005874, AF134471, AP000152, ALI031659, and AC007073.
	7535	503543	1 - 263	15 - 277		
HPSAA91	7535	503543	1 - 263	15 - 277		AA371574, and AA371573.
HPSAA75	7536	503544	1 - 303	15 - 317	15 - 317	R16798, ALI247531, ALI638195, ALI209197, AA978119, AA371428, and AA551295.
	7536	503544	1 - 303	15 - 317		

HPSAA41	7537	503569	1 - 428	15 - 442	AA371564, and AA371563.
HPSAA30	7538	503567	1 - 454	15 - 468	AA749134, AA766711, AA824619, AA371550, and AA371549.
HPSAA03	7539	960941	1 - 547	15 - 561	AA715707, AA834650, AA371508, AA362349, AL021579, AL080243, AL049776, AF165926, AP000030, AC0055071, AP005552, AC004797, Z83847, AC006101, AC0053821, AC0059921, AC005562, AL034420, AC007536, AC005551, AC006236, AL031311, AC005015, AL121658, AC007546, Z93023, AC004876, AC002126, AP000045, AC005089, AL031431, AC005899, AL049766, AC005519, AC004841, AC008018, Z95132, Z97054, AC004491, AP000113, AC004966, AL0050307, AC004913, AC005829, AC005696, AL121652, AC006449, AL022476, AP00557, AC009516, AF053356, AL022238, AC002477, AC005902, AC000111, AC005231, AC009247, AC004084, L78833, AF111167, AC006965, U91318, AC004020, AF010907, Z98885, AC005529, AL040697, AP000689, AC007371, AC006511, AC004671, AL109967, AC005084, AF196969, Z98051, AL024498, AC005525, AC006255, AC006050, AL031005, AL049760, AC006121, AC005412, AC005057, AP000704, AC002551, AC005620, AP001549, AC002470, AF207550, AC003029, AC007878, AC004125, AL035086, AC002350, AC002312, AF031078, AC003982, AC004882, AC005086, AC004895, AF030876, AC008372, AC000353, AC002492, AC005837, AP000345, AL009181, AL035417, AC007151, AC006006, AC007308, AP001053, AC004858, and AC002352.
HNNTA24	7540	911178	1 - 1654	15 - 1668	AL037632, AL110760, AA524604, AL044340, AA287618, AL038990, AL138265, AF034176, AA708751, AL135377, AL866487, AW188427, AA311156, AA680243, AL963221, AL042905, AL042906, AA601355, AL135698, AA984258, AL047602, AA742815, AA608741, AA481760, AT745133, AA487068, AL119123, AT732120, AA584482, AW243793, AA223932, AA658844, AL119331, AA608612, AL102235, AA524821, AW151713, AL654588, AA487475, AW069819, AW079809, AW102811, AL131046, AL679294, AW405593, AP951863, AA608588, AL679871, AW328050, AL041706, AL457389, AA211734, U51704, AA133505, AW172908, AL046746, AP952885, AA665449, AA493641, AW080062, AL655525, AA126635, AL160144, AL016704, AA133332, AL694178, AA634991, AA113272, AW008089, AA534064, AL16537, AA224525, AL130647, AA643454, AA643457, AL094192, AL696793, AW277171, AW130036, AA838140, AL40641, AL499134, AA904211, AL583978, AW089861, AA046906, AA608796, AA431104, AA640277, AL157876, AA643452, AL801141, AA845659, AA456937, AW089625, AL913324, AL633490, AA577824, AL132963, AG632281, AA504898, AA513422, AL821881, AL821918, W96277, AW079792, N66012, AA206044, AA297145, AW129686, AA445934, N80210, N76766, AA584862, AF196779, AC004099, AC006241, AC005531, AC005412, AF207550, AC005808, Z99716, AC004033, AL049869, AP000356, AP000556, AC005519, AL049776, AC005901, U95742, AC005071, AC006441, AC004805, U95740, AC005484, AC007216, AL024498, AL022165, AC005399, AC004084, AC007630, AC006079, AC002544, AF053356, Z93244, AC002492, AP000049, AC009247, AC005562, AC007386, AL117258, AL035420, AP000311, AC005829, AC007225, AE000658, AC007011, AC004263, AL133399, Z93023, AC008372,

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HNIIPF67	7541	859817	1 - 461	15 - 475	T97754, D80212, D80439, D59619, D80210, D80240, D80157, D81030, C14389, D80219, D80268, D80166, D80045, AA305409, D80022, D80248, D80133, D59859, D59502, D51423, D51799, D80253, D80188, D80247, D81026, C14331, C14014, D80195, D51060, D80166, D58283, D59927, D80391, D80164, D51759, D59787, D59467, D59275, D80038, D80043, AA514186, D80227, C15076, D80193, D59610, D57483, D59653, D80196, D80269, D5A889, D51022, D50979, D80522, D80024, D50995, C75259, AA305578, D80378, D80302, AA514188, D80241, D80251, AW360811, D51103, AW177440, T03269, C14429, AW178993, C06015, D59373, AW377671, AW375405, C05695, T48593, D80064, D45260, AW178906, AW366296, AW360844, AW360817, AW179328, C03092, AW375406, AW378534, H67854, AW179332, AW377672, AW179023, AW178905, AW177731, AW378528, AW178762, AW179019, AW378532, H67866, AW177501, AW177511, D51221, AW179020, AW377616, AA809122,

HNHPD68	7542	974350	1 - 483	15 - 497	<p>D38246, AW352171, D81111, AW352170, T11417, AW178907, AW178908, AW1525917, AW179024, D51250, F13647, D80949, AW1525923, D80258, AW360841, D59503, AW176467, AW177733, AW360834, AW352120, AW177505, AW178775, T03116, AW367950, AW178909, AW177456, AW179004, AW179329, AW178980, AW178986, AW178914, AW178774, C14227, AW178754, D59317, AW179018, C14344, AW352158, D80014, D80228, D59474, C14973, Z21582, AW1525920, AW352117, AW378533, AA514184, D58101, D51213, D51079, C14057, D60010, C14046, AW35686, D80168, AW179009, AW179012, AW178911, AW378543, AW378525, AW378540, AW177722, AW352163, D59695, D59551, AW177734, D59627, AW152525, AW177728, C14407, D60214, C14298, AW1525215, AW1525227, AW1527774, AW1525912, AW178781, AW1525242, AA285331, AW10186, AW378542, AW1527751, AW1525925, AW1525222, D51053, C05763, AW378539, D45273, C16955, Z33452, T02974, C14077, AW058566, AA305720, C13958, Z30160, AW360855, AW1525237, H67858, C04682, T03048, T02868, AW369651, AW1525216, AW1525928, F13796, D80314, D31458, N66429, AW1525238, D50981, AW018138, AW02298, AW008278, AF058696, A82595, AR060385, A84916, A62300, AW028859, AW132110, AB002449, I50126, I50132, I50133, AR060138, X67155, AW016514, D26022, A43192, A43190, AR038669, A67220, I14842, A25909, A45456, Y17188, A94995, A26615, AR052274, Y12724, AR066488, AR066487, Y09669, D89785, A78862, D34614, A30438, AR008443, AR054175, Y17187, AR016808, D88547, A63261, AR008277, AR008281, D50010, AR002872, R82448, AR008406, A70867, X82626, AR016691, AR016690, U46128, A64136, A68321, AR025207, I79511, X72378, D13509, AR060133, X68127, AF123263, AR032065, and A000347.</p> <p>AA678653, M62281, AA373185, AA599209, AA636049, H47716, AW1521649, AW126075, A1400888, AA356989, AW137994, AW419403, D82794, H70162, AA745961, AA483874, AL048508, R94977, N79242, T95826, H79669, AL043039, AA180541, H73186, AW090739, AA309370, H83162, H54821, AH39860, AA538270, A1088796, AW190486, AL348417, AL139165, AC004788, AC007092, AC004823, AC007243, AC000124, AC005570, AC012099, AL049743, AC004470, AP00433, AC006371, AP000949, AL022161, AC009891, AP000568, AL035469, AC007364, AC004014, AF064860, AC002453, AC006288, AC005518, AC007372, Z83848, AL049837, U04455, AL110505, Z39328, AL109759, AC008168, AL035258, AC005999, AL049734, AC005235, AC003082, AJ229042, AF015262, AC007262, AL022397, AC004806, AJ229043, AC006054, AL031114, AC007344, U53930, AP001039, AC002080, AF002997, Z93019, Z72001, AC002357, AL044083, AC007628, AL035593, AC002080, AF002997, AC006484, AC008067, AC008498, AL132777, Z83843, AC006548, Z80771, AC006016, AC003958, Z83820, AL034369, AC007317, AL022153, AC004055, AF029308, AL035687, AL031319, AC002463, AL109799, Z70225, AL021068, AC007671, AC004894, AL030996, AC004673, AL121823, AC007535, AC003087, AP000517, AL022401, AC008170, Z82200, AC004981, L78742, AC005243, AB023054, AC0011331, AC000117, AP000884, AL031673, Z70227, AC002483, AC005610, AC007397, AC002488, AC004782, AL079334, AC003016,</p>
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HNHOX01 HNHOV24 HNHOQ36	7543	915303	1 - 186	15 - 200	Z99755, AF188025, AL035246, AC000377, AE000659, AC003986, AC002452, AC011198, Z50660, AC006291, AL035555, AB019437, AC003693, AC006206, AL121838, Z70688, AC006971, Z80107, AL031885, AL050322, Z95126, AL132994, AC004998, AC004959, AL049565, AJ006343, Z81001, AC008125, AL031903, AC005188, AC007450, AC002429, U80459, Z82204, AC007514, Z92543, AL121782, AL096827, AC007970, AC003003, AC006963, Z82198, AP000519, Z82216, AC004041, AC002122, Z81007, Z76735, AC004240, AJ006345, AC006070, AL137191, AB020860, AF042091, and AL022329.
	7544	974344	1 - 328	15 - 542	AL035091.
	7545	859824	1 - 460	15 - 474	AI792564, AL053778, N73203, AA077619, AL018726, N57709, N73060, AA757621, R83708, AI362442, H01852, T09040, AL078143, H37821, AA525331, AI473549, AI128439, AA744098, AA301899, AA584445, AA297776, AL017733, AW373645, AI246061, AA501617, AA569157, H63066, AA904211, AA321595, AI054090, AL138252, F36200, AA516192, AI249853, AA862029, AI284543, AI273675, AI254770, AA653713, W23432, AI251944, AI210334, AI251203, AI268564, AI251284, AW276933, AI085095, AI250552, T03928, AW102930, AA588353, AI138918, AI471597, AW084004, AA741020, AA832016, AI275982, AI371804, T69022, AA557984, AW247089, AI289050, AI284092, H57324, AW192518, AI030988, AI037777, AA728911, AA715508, AA831801, AI949319, H25626, AW152172, AI963408, AA449979, AA225348, AA633565, W63553, AI679759, AA610351, N35041, AA564256, AI036070, AW223808, N50710, AW080772, F17537, AL079894, R25708, AA525949, AI679045, AA975915, AA664248, AI679294, F25348, AA182629, AI052611, AW248498, AI431303, CI4599, AA598608, AA682536, AI432851, AI537931, AI459866, AA135988, F33126, AI798242, CI4880, AA814719, AA468494, AW089054, AA449460, AA226346, AI251741, T08386, AA679173, AI613285, AI223626, AA348859, AA219542, AA362791, AI042869, AA776548, AA115655, AW303098, AI889579, AA653291, F32248, AA857812, AA832152, AA084679, AW168699, AW248724, AA846014, AA132929, AW167909, AI917891, AF043251, AF050154, AC005494, AC002057, AF207550, AP000337, AC005233, AP000215, AI022336, AC001228, L13712, AI133445, Z83844, AP000321, AF024534, AL109963, AC000126, AP00121, AP000167, AP000052, U82671, AI022238, AC004500, AL096710, X80017, AC005899, X51936, AC002994, AC006512, AC004098, Z95118, AC006530, AC007058, S77605, U91324, AP000008, AP000704, AC004967, AC002430, AC007384, AC008064, AP000555, AC005328, AC002369, AC005589, AI021368, AC004462, AC006388, AL109852, L77570, AF196970, AC004817, AL132712, AC004686, AL117258, AC007664, AL021707, AL022724, M57627, U16720, AL109802, AC004034, AC004234, AC003692, AL109956, AL031428, AI022327, AC004997, AL031005, AL050338, AC005587, AC006318, AC005585, AL010205, AP000501, AC007277, AC007686, L29074, AC006430, AC005736, U72845, AB014540, AF008915, AF135025, AC005190, Z9154, AL050404, AC004186, AC003047, AC006132.

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HNHOP92	7546	790911	1 - 720	15 - 734	AA515610, AJ230815, AA330576, AA353402, AA578326, AA169232, AW192471, AA584241, AI379710, AA481147, AA480974, AI832832, AA493464, AI917658, AI433952, AA427747, AI167178, N27362, AW148964, AI049999, AW169183, AA209438, AI453476, AA995373, AI869406, AA594164, T57562, AA848131, AI696455, N76712, AA570037, E37050, AA879022, AA167656, AA916556, AA348889, AI061203, AA573067, T05143, AA084320, AA132929, AA225645, AA218684, AI679082, H65404, AA525879, AW743817, AA632621, AA600127, TS4552, F36482, N26159, AI216981, AI801563, AA171400, AA977385, AW338376, AA861184, AI732327, AI890297, AI860648, AI925617, AI879968, AA456940, AI890091, AA280198, AW074332, AA513565, R80053, N86047, I77578, AI038577, AA564253, AI952574, AI204310, AA362439, AI719985, AA528507, AI271693, AA713720, AA425283, AA584360, AI434103, AA829565, AI907506, AI610082, T26553, AI126238, AA381948, AI572680, AA661583, AA774398, L48866, AI354369, AI016434, AW021674, AW006527, AA687565, AA553389, AA749062, AA640104, AA338436, N49298, AA099785, AW243808, AI086229, AA088900, AI952885, AW273177, AA303002, AW080062, AW773235, AA099801, AA629107, AL042731, AA523719, AI223242, AA524604, AI079682, AW162314, AW162332, F05050, AA347203, N76093, H68017, AI560063, C15279, AI672515, AI967976, AI754926, AA362670, AA854222, R16061, AA115769, AW406180, AI800189, AI958861, AA527391, AA313066, AA634882, AI818921, T03774, AC004477, Z99716, AC005412, AF165142, AC006544, AC009247,
HNHOP88	7547	974327	1 - 523	15 - 537	
HNHOP32	7548	974330	1 - 502	15 - 516	

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HNHO163	7549	838790	1 - 849	15 - 863	AA648110, AL046409, AL042753, AL334443, AL284640, AW303196, AL963720, AL138455, AW301350, AW274349, AW419262, AW410400, AL679782, AL431303, AW327868, AL037683, AW193265, AW338086, AA649642, AL281881, AL053672, AL270117, AL350211, AL613280, F36273, AL305766, AW162049, AL295531, AL110770, AL061534, AL358571, AL471481, AA652764, AA587604, AL962050, AL133164, AL345654, AL298710, AL473943, AW438643, AL339850, AL341664, AL375710, AL177061, AL289067, AL619997, AW276827, AL038785, AA526787, AL044940, AL042853, AL688846, AW193432, AA713815, AL064864, AA490183, AL457397, AW270270, AL042420, AW276435, AL119984, AL732865, AL567674, AA507547, AL341548, AW166815, AL499134, AL046205, AW021583, AL754658, AA178953, AL192740, AW073470, AW104748, AL537955, AL049722, AL917271, AL085719, AL345518, AL281697, AL120687, AL634695, AL821271, AL918421, AL745325, AL379719, AL251002, AW408717, W79504, AL799642, AL340453, AA631507, AW406162, AL744995, AW261871, AL148277, AL890923, AL947360, AL492166, AW023672, AA523815, AL564185, AL017024, AW339568,

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					X76629, AC003088, AL031584, AF015170, AP000328, AC004963, AP000473, AC004686, AC016026, AL049776, AL050308, U57006, Z81369, AL021918, AC008064, AC004502, AP00359, AC004990, AL121591, X88791, AC005209, AC005754, U67225, AL049559, AC006288, AC004690, AL103548, AL034554, U57008, AC006195, AC006390, AC007030, Z98046, AC005919, AC006031, AL022722, AL009172, AP000291, AC005701, AL023284, AC005057, X55931, AC002310, AC006344, U12582, AC005829, AL022302, AC007999, AC003664, U12583, Z81364, AC005284, AC005565, AL079295, U67231, AC007226, U62293, AC010722, AC000066, and AC004167.
HNH0107	7550	952285	1 - 551	15 - 565	AA209360, and Z85994.
HNH0F94	7551	948720	1 - 772	15 - 786	AW407632, AL687343, AC0678930, AL284640, AW193265, AL046409, AL613280, AL270117, AL305766, AL350211, AL963720, AL431303, AL610159, AL754653, AA828704, AW276827, AL814735, AL334443, F29989, AW301396, AL251034, AL250552, AL284543, AA491814, AW103758, AL375710, AL345418, AW301554, AL245693, AW301350, AL251284, AW274349, AA502860, AL245654, AW327868, AL251203, AA469451, AL688846, AL890348, AL225626, AL610997, AW193432, AL144101, AW302013, AL699938, AW438643, AW303098, AL341664, AA806796, AL061334, AL254770, AL826761, AL583443, AW203176, AA847499, AL289067, AW088202, AW406162, AL471481, AW268973, R17793, AL613389, AL041690, AL754955, T74524, AL633590, AA503283, AL601229, AL570261, AW419262, AL049634, AA578861, AA743968, AL037683, AW088846, AW340905, AL246409, AW408767, AL537800, AA630925, AL053672, AW276435, AA682912, AL085719, AL044940, AL355007, AA811741, AL298710, AA719524, AL830390, AL119691, AA502963, AL708009, AA745326, AA570740, AA483606, AA623002, AA713891, AW023111, AL898781, AL281697, AA577906, AL744995, AA581903, AA568204, AA635433, AA720702, AA503284, AA503258, AL344844, AL199816, AL345681, AL754658, AL345675, AL434706, AA25246, AL251241, AL589230, AA584752, AW339533, AA490183, AA904211, AL955323, AL860013, AL334464, AW407578, AL344812, AL048925, AA084609, AA812139, AW008317, AL492166, AL042420, AA594145, AA758934, AW276817, AL434695, AC0016026, U57008, AL031123, AL021393, AC005200, M37551, AC005520, U8394, D83989, AC007999, AF015147, U57009, U8395, AC005488, AC006241, AL023656, AP000117, AC002455, U57005, AC004152, AC004814, AL031121, U8391, AP001172, AC002470, AC008008, AF015157, AL022322, AL031680, AC004650, AC005913, AC006213, AC005291, X55925, AC007676, AL049795, AL034549, U8392, U57006, AF077058, AC006251, U8393, AL049766, AC000003, AF015156, AC002430, AB023049, AC005280, X54176, AC005288, AC005535, AC004675, AC006430, AL008629, AC005231, AC005914, D84394, U18387, AL035587, AC007384, AC004263, U18398, AC004929, AF088219, AC000396, AL049557, AP000193, AC005046, AL121653, AL008716, U57007, AC003983, AC016025, AC005900, AC003074, AC006019, AL031729, AL121603, X55926, X54181, AC007541, AC007541, X54180, AP001054, U51997, AC004234, X75335, U18399, X55931, X53550, AL109801, AL033543, Z98742, D87675,

HNHN20	7552	773683	1 - 265	15 - 279	<p>AP000557, ALI030997, ALI033659, AC009516, AP000359, AP000493, AC000052, AC004815, AC005736, AC005193, AC002538, AC004228, AC007677, AC005544, AC004000, X54175, ALI031005, ALI096701, AC004638, U18390, AP000555, ALI035079, AC005190, AC016830, AC004134, AC002289, AF222685, AC005632, AF015151, AC004019, X54178, AC006285, AC005089, Z82190, Z97632, ALI050341, AP0000345, AP000501, AC005088, AC005778, AC003684, ALI022097, AC005387, AC005015, AC005745, ALI023807, AC007227, AC007666, Z97552, ALI078463, AC008079, AC008101, AC004602, AF222684, X55924, AC005484, ALI031311, AC002985, ALI079340, U73630, ALI096861, ALI022302, AC004686, U191326, AC003282, AC004832, AC004838, AC005028, AC005808, AC004643, U78810, ALI031391, AC004946, X55930, U63630, Z93241, AP000020, AP000161, ALI049588, Z98051, ALI023804, X55927, AC0066511, U95742, AC002041, X54179, Z82976, ALI021707, AF200465, Z83340, AP000512, ALI109865, AC005072, AC006501, AC004890, AC002404, AC002094, AC005323, U95739, U02532, ALI031650, ALI021939, AC009263, AC006002, ALI109985, AF196969, ALI021453, AC006487, AC008115, AC005620, AC002400, X55932, AP000013, AP000154, AC002300, U34879, AC007216, Z81369, ALI021977, ALI078477, AP000239, ALI025755, ALI096776, AC004963, AC000111, AC000025, ALI031848, AC009247, AC005837, AC002504, AF124523, AC007690, AC004884, AC007204, AC005527, AF015153, AC006101, AC006088, AC007298, AC005666, AC000115, AC004028, AC005821, AC006160, ALI022163, U67801, AP000044, ALI079295, U521112, AC006057, ALI035361, AC005784, AC002476, Z84469, AF109907, and AP0001102.</p>
HNHN20	7552	773683	1 - 265	15 - 279	<p>TE3118, AW137918, ALI060711, ALI068073, ALI344602, AA514255, AC003107, and AC005632.</p>
HNHN08	7553	958377	1 - 422	15 - 436	<p>H70153, and AC0060671.</p>
HNHN81	7554	928378	1 - 604	15 - 618	<p>D51066, ALI04104, D55823, AA305409, D80253, D80024, D80166, D59619, D80210, D80240, D80660, AA514186, G14389, D80043, D81030, D80133, D80247, D59839, D80212, D51799, D80164, D80219, D51423, D80022, D80391, D59787, D80195, D80188, D80248, G14331, D59502, D59467, D57483, D59275, D59610, D80227, D81026, D50995, D80196, D80339, D80251, D80269, D59889, D51022, D50979, D80268, D80522, G15076, D59927, AA305578, D80038, D80193, D80045, D80241, AA514188, AW360811, D80378, AW177440, D80302, G05695, G14429, AW178893, AW377671, AW375405, D80157, T03269, G75259, AW178906, AW179128, AW366296, AW360844, AW360817, D59373, AW375406, D51103, AW378534, AW179332, AW377672, AW179023, AW178905, D51759, AW360841, AW378532, D58253, AW177731, AW177501, AW177511, D80132, D80134, AW352171, AW377676, AW352170, AW178907, AW378528, AW178762, AW179019, AW179024, D51250, AW176467, AW177505, D81111, D59653, AW179020, AW178775, AW367967, AW369651, AW178909, T48593, AW177456, AW179329, AW178980, AW178914, AW177733, AW178908, AW178754, AW179018, C06015, AW352158, AW360817, D80949, AW178774, D59695, D52291, G445260, AW352120, D59627, D51079, AW179004, AW179012, AW375855, AW352163, F13647</p>

HNHN066	7555	918684	1 - 324	15 - 338	
HNHN001	7556	915538	1 - 380	15 - 394	AW360834, TT1417, D80064, Z21582, D80168, C14298, AW378543, AW352174, D80258, AW177728, H67854, C14227, AW179009, AW352923, AW367950, AW178911, AW177722, D59503, AU910186, AW378540, C03092, H67866, AA809122, D51221, AW178781, D58101, AW905836, D58246, AW177508, C14407, D80228, AW352917, C14077, AW178986, AW177497, T03116, AW35686, AW35850, D59317, D51213, D80014, D59474, AW177734, AW352920, D45273, AW177723, C14973, C14344, AW378533, AA514184, D59551, C14957, AW352515, D60010, AW352525, D60214, AW352527, C14046, AW557774, AW557751, AW352912, T03048, AW529525, D51097, AW352542, AA285331, AW378542, AW352522, AW378539, Z30160, C16955, C05763, Z33452, T02974, D51053, AW360855, H67858, AW352537, C04682, D50981, T02868, C13958, AW352928, D80314, AW352328, C62298, AB028859, AR018138, AW132110, A62300, AR008278, D48916, AF058696, A82595, AR060385, AR002449, AR087853, X67155, Y17188, AW9995, D26022, Y12724, A25909, A67220, AW78862, Z34614, D800443, AW30126, AW30132, AW30133, D88357, AR066488, AR016514, AR060138, A45456, A26615, AW352274, X32626, Y09669, A43192, AW033669, AR033669, AR066487, A30438, AW352274, AW352274, AW352274, D50010, Y17187, AR066490, AR008277, AR008281, A63261, H18367, AR008408, AR062872, A70867, AR016691, AR016690, AW46128, D13509, A64136, A68321, AR060133, AR012117, Y79511, X68127, U79457, AF123263, AR032065, Z82022, A63887, and AR008382.
HNHN066	7555	918684	1 - 324	15 - 338	
HNHN001	7556	915538	1 - 380	15 - 394	A1247886, and AW133558.
HNHN039	7557	950971	1 - 385	15 - 399	AW186834, and A0006453.
HNHN002	7558	918715	1 - 499	15 - 513	AW124612.
HNHN124	7559	859836	1 - 389	15 - 403	AA814193, AW352347, AW691551, AA861334, Z38674, and AW129261.
HNHN009	7560	800482	1 - 517	15 - 531	D54900, AA4331008, R995756, D59502, D80195, D80164, D80166, C15076, D80022, C14389, D81026, D80193, D59619, D80210, D80240, D80045, D80188, D59467, D59275, D80227, D81030, D80212, D80219, D58283, D59859, D80391, C14331, D59787, D51423, D51799, D80233, D80043, AA305578, D80269, D80038, D80196, D50979, D59927, AA514188, AA305409, D59610, D57483, D80378, D80366, D51022, D50995, D59889, D80024, D80439, D80133, AW360811, D80428, D80251, D80522, D51060, AW177440, D80241, AA514186, C14014, AW178893, D80247, D80302, AW3755405, T03269, D80268, AW366296, AW177456, AW377671, AW179328, AW360817, A737676, D51103, AW375406, AW378534, AW179332, AW377672, AW179023, AW178905, D80157, AW178762, D80132, AW378532, AW352711, C06015, AW352170, AW177731, AW178907, C1788528, AW179019, AW179024, D80168, D51759, D51250, AW178906, AW179020, AW178980, AW177733, AW178908, AW179018, D59695, AW177728, C03092, AW360651, H85593, D80134, D80949, D52291, D58253, AW178914, AW177874, AW378543, AW378525, D80258, D59503, D45260, AW352923, AA809122, AW178781, AW378540, AW352163, H67854, H67866, AW3560834, D59627, T03116, AW905836, AW367950, TT1417, C14407, D59317, C14077, D59317, C14077, D80064,

[illegible]

HNHMY52	7569	975207	1 - 610	15 - 624	<p>           AI904894, AC006312, AC005924, AC006071, U92032, AL050318, D88270, AF001549, AC003026, AL035683, AC004876, AL078638, AC005484, AC005284, AC002994, AC004253, AC008079, AF111168, U47924, AL049636, AC004459, AC005081, AC007565, AL078460, D86992, AP001068, AC006023, AL034400, AC006088, AL049709, AC004816, AC008101, AP000303, AC004889, AL031236, AC007707, AL078624, AC005839, AL022323, AC005251, AF134726, AC005261, Z98200, Z84480, AL049647, AC007240, AP00114, AP000046, AC005207, AC006241, AL031289, AC002301, AL133382, AC002430, AC007687, AC004967, AC004893, AC004263, AC004099, AJ011930, Z49235, AL031681, AC002404, AC005632, AC005488, Z97630, AC007384, AL049712, Z95118, AP000694, AC004883, AL031662, AC006537, AC005089, AC005215, AC005776, AC005792, Z97055, AC007450, AC005881, AC005102, AC002117, AC016026, AF111169, AC003983, AC008072, AC002425, AC005902, AC016025, AC004408, AC005919, AC004946, AF117829, AC006538, AL078644, AL139054, AP000553, Z86090, AF031078, AC009263, AC005520, AC000025, AP000355, AC004159, AC002375, AL109963, AC006012, AC006285, AL133500, Z98750, Z95152, AF030876, AL022394, AC004955, AC004686, AC006132, AC002094, AL132718, AC004033, Z49236, AC008735, AF045355, AC005944, Z93930, AC008372, AC006480, AC004050, Z99044, AL008735, AF045355, AC005944, Z93930, AC008372, U80017, Z98051, AF003626, AL031431, Y07848, AC005562, AC004057, AL034420, AC005193, AL049849, AP000350, AL121655, U62293, U63721, AC006223, AC007308, AL135744, AL133445, AL031584, AC007993, AF196779, AC003101, AC007358, AC007038, AP000362, AL049758, AL035681, AC002549, AC005527, AC005288, AC002400, AC005841, AL035458, AC005057, AC005225, AC005358, AD001527, AC006251, Z83822, AC005832, AC002482, AP000512, AL110502, AC002477, AL049745, AC002072, AL096791, AL117391, Z97054, AL034402, AL008582, AC007283, Z98742, AL035091, AC005231, AP000557, AC005154, Z98036, AC004859, AC006344, AL121603, AC006111, AC006512, AC005399, AC004167, AC002470, AF181897, AC002492, D83253, Z99716, AC003006, AP001034, AP000008, AL031056, AP000502, AC003104, AF129756, AL035417, AC005525, AP000704, AL021154, AL022476, AC006117, AL031777, AC000549, AC008124, AC005300, AL034548, AC005529, AC005800, AL133238, AP000352, AC004770, AP000009, AC007541, Z85987, AC021092, AL121653, AC005004, AC006014, Z98941, AL080243, U15422, AL049569, AC005625, AC005043, AC005695, Z98884, AC008009, AC012599, AL022722, AC002565, AC004783, AC005180, AC005003, AC003070, AC005332, AL096712, and AC007685.         </p>
HNHMY52	7569	975207	1 - 610	15 - 624	<p>           AA410788, AL352446, AW275432, AL224619, AJ917132, AL859906, AJ056177, H20914, AL190648, AW419389, AL612802, F35684, AL599080, AL169245, AL315361, AL162442, R67701, AF754767, AL828479, AL512090, AA719364, AL312784, AW166611, AA228778, F30158, AC003041, Z99943, AC005913, AL096702, AC005940, AL031389, AC006252, AC010205,         </p>
HNHMS26	7570	975206	1 - 437	15 - 451	

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HNHLQ07	7578	952279	1 - 641	15 - 655	AL022394, AC005871, AC008372, AC006111, and AC007052.
HNHLG36	7579	855071	1 - 544	15 - 558	AA700856, W92080, W92074, and U47924.
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HNHLD70	7580	756668	1 - 402	15 - 416	AA1199808.
HNHLC01	7581	915363	1 - 555	15 - 569	AA377871, AL078475, AP000025, AP000026, and AL050302.
HNHLB03	7582	923091	1 - 596	15 - 610	R87227, H51542, R84527, H39138, AW205403, A1970379, A1651385, A1038507, AA977060, AC006312, AC005630, and AC006328.
HNHKT86	7583	785104	1 - 366	15 - 380	R43189, AW297929, T26440, T26439, and T17457.
HNHKKQ30	7584	723868	1 - 435	15 - 449	R94028, AA848093, R93984, and AA905345.
HNHKKP03	7585	923276	1 - 706	15 - 720	A1023587, AA889354, AA846791, and AL022333.
HNHKK161	7586	859925	1 - 651	15 - 665	AA262089, N40258, Z99127, Z94721, AC005777, and AL031737.
HNHHS54	7587	730706	1 - 550	15 - 564	R55602, R11681, and AC004913.
HNHHR83	7588	781195	1 - 508	15 - 522	R15158.
HNHHC85	7589	784345	1 - 571	15 - 585	W95091, and H49177.
HNHHL38	7590	736064	1 - 488	15 - 502	AA088554.
HNHGG33	7591	830068	1 - 328	15 - 342	AA1189067.
HNHHP86	7592	784698	1 - 371	15 - 385	
HNHHP61	7593	741836	1 - 307	15 - 321	
HNHHP52	7594	726576	1 - 343	15 - 357	AA1189682, AA491767, W02419, AW407007, AW105463, AA747977, T51556, A1491765, A1199582, AA719433, A1762578, A1573009, AL041375, A1246996, A1445224, AW275432, AA714110, A1870453, AA558366, F00937, AA722336, H38769, AW304536, A1778972, C18779, AA225754, A1225392, T11936, AW088636, A1338357, AA219349, A1459523, AA458534, A1206841, AA743628, AA502532, A1045297, T90477, AA947369, AW028950, AW023111, H29914, T50676, H67064, F35684, A1608751, A1798493, A1W05729, AL045076, AA584756, F30310, AL079734, AA445934, AA604843, A1353761, A1356440, A1623805, AA156723, R99034, AW272294, A1242614, AA515939, A1228979, H81346, AA229823, A1355103, A1807760, A1879951, AA302982, AA225406, AA018231, A1131779, A1635028, F23338, AA018923,

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HNHHF39	7595	705407	1 - 333	AA610822, AC006044, AI121852, and AC000004. AA610822, AC006044, AI121852, and AC000004.
HNHHF38	7596	709278	1 - 308	AA084070, F28776, AI610159, AI754955, AA654771, AA482711, R77905, AA501600, AA06162, AI921649, AA199692, N43757, AI355206, AI281881, AI127353, AA491814, AA559290, AI471481, AI200051, AI859742, AA826303, AI194761, AA886584, AI283911, F29989, AI061334, AA406755, AI357030, AI169537, AA604156, AI801600, F36273, AI802526,



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HNNHF37	7597	708714	1 - 350	15 - 364	HG5022, and AA186889.
HNNHF28	7598	694365	1 - 331	15 - 345	AL035454.
HNNHF13	7599	657245	1 - 124	15 - 138	AA486925, AA188664, AA761430, AC005912, AC007563, AL109623, AL049843, AL034419, AL078477, AC006948, AC000864, AC000353, AC005562, Z81364, AC005632, AC004990, Z84469, AL022476, U91323, AL031005, AL031053, AC002288, AC003037, AC004601, AL049749, AC004514, AC005684, Z95116, and AC004832.
HNNHF03	7600	924221	1 - 235	15 - 249	AA459664, AA459676, and W38373.
HNNHC61	7601	741839	1 - 359	15 - 373	AA774118, AL070030, AL023883, AC002301, and AC006504.
HNNHG61	7602	948731	1 - 403	15 - 417	AA284640, AL046205, AW327868, AL046609, AL048925, AA984708, AL1610159, AW276827, AA828704, AH67919, AW021583, AH313303, F36273, AW193265, AW276817, AL1613280, AA523843, AL281881, AE357551, AA630925, AA521399, AL345654, AA521323, AL350211, AL270117, AL305766, AA758934, AW338500, AL001591, AL037683, AL379719, AW147572, AW419262, AL334443, AA621838, AL091495, AA669840, AL219406, AA528516, AW148792, AD246409, AW407632, AL375710, AL041690, AL471481, AW338086, AA713891, AA133333, AL131164, AW379672, AL619997, AL688846, AW438643, AL138455, AA490183, AL969436, AA654771, AW339568, AL110770, AW193432, AW270270, AA514819, AA493621, AL341664, AW238278, AA559290, AA169503, AL761471, AA387256, AL048626, AA493225, AA133406, AA491284, AL937850, AA977743, AL688928, AA569471, AL623898, AW157005, C75026,

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HNHGTU56	7604	859953	1 - 760	15 - 774	AA614095.
HNHGT192	7605	496480	1 - 387	15 - 401	AL037067, AL224583, AA595661, AA603400, AL049845, AL439525, AA489390, R42954, AL690379, AW250029, AW272294, AA810376, AA513851, AA225406, I24331, Z98046, AC000075, AP005502, AC007371, AC005664, AP000553, AL117258, Z97054, AL109623, AL135744, AC004686, AC009516, AF053356, AC006547, AF111168, AC004448, AC004929, AC005207, Z95113, AP000211, AP001033, AL031680, AF205588, AL031281, AC005158, AC015853, AC007676, AC000084, AC002115, Z95114, AC009247, AC006557, AP000039, AP000107, AC004134, AL034417, AL020995, AC004771, AL022238, AC004526, AL117339, AC006449, AC007053, AC004106, AC005696, AC007065, AB026899, AC005874, AF134471, AC005519, AC005663, AL034429, AC007066, AC005666, AC004019, AL022326, AC004967, U91321, AL117337, Z86061, AL008582, AC005516, AC005899, AL096794, AP000509, AL035400, AC005229, U62317, AP005577, AL133245, AP000500, AC016027, AL031985, AL132712, AC005261, AC004525, Z93023, AC004985, Z96074, AC005730, AC002126, D84394, AL031311, AC000120, AC005081, AC002472, AC003101, AC004821, AC004812, AC002401, AL031432, AP001054, AL033527, AC004673, U83268, AL049776, AF029308, AC007263, AP000511, AL034421, AC004921, AC005011, AC004231, AP000210, AP000132, Z93241, AP000345, AC002563, AC008038, AL031678, U91318, AC003306, AC016830, AC004477, Z98051, AL049869, AC005529, AC007151, AC005288, AP000359, AL030321, AL139054, AP000505, AC005746, AC002544, AC005189, AP000248, AL109963, Z85986, X87344, AC004079, AC006946, AL022336, AC002554, AC006468, AC005871, AC002470, AC004841, AL034423, D87675, AC004587, AC003043, AC007207, AC005911, AF109907, AC005412, AF165926, AC004236, AC005355, and AC007630.
HNHGT80	7607	775409	1 - 385	15 - 399	AA179041, and AA176902.
HNHGT15	7608	660304	1 - 629	15 - 643	AA342238, AL283938, F99968, AA610255, AA523695, AB69797, AA488551, AA584765, AL358712, AL933871, AA598605, AL920303, AA489483, AL280535, AA229721, AA903369, AL049538, AA578621, AA586433, AA568204, AA570740, AA483606, AA570441, AA772151, AA87492, I47138, AW008184, AA361513, AW302017, AA577824, AA384890, AW078909, AA280509, F90310, AL635776, AL693583, AB925665, AA525753, AA581471, AA507814, AA502532, AW082104, AL772016, AL078477, I34294, AC004386, Z84466, Y10196, U95743, AC004999, AL031643, AC002287, AC003109, AL035460, AL117338, AL022719, AP000466, AC008115, M87889, AL049643, AC007283, AC006965, AC002420, AL136295, AC006518, AC006509, AC005972, M29929, AL121653, AC008033, AC006965, AC002420, AL136295, AC006518, AC004973, AC004025, U80017, AC006581, AL022316, AL023553, AL132800, U20047, AC007537, AC004081, AC004816, AC005399, AB023050, AC005879, AL034417, AL031668, AC003553, AC005304, AL117339, AC005376, AP000248, AC005227, AL110114, AC006016,

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HNHGS24	7610	677228	1 - 791	I5 - 805	W89080, R12665, AT762545, W88500, AL434243, AL689719, AW138454, W88987, R16402, D45650, and W89080.
HNHGO45	7611	582523	1 - 865	I5 - 879	R97614, R91776, D81661, and AL034062.
HNHGN27	7612	859972	1 - 417	I5 - 431	AA393618, and AA398697.
HNHGI60	7613	740396	1 - 476	I5 - 490	AA017482, AA019002, AA019302, and R84777.
HNHGI03	7614	923829	1 - 439	I5 - 453	AL079734, AA572813, H68343, AA579152, F16848, AA225890, AA838091, AL6093979, AL446452, H38769, AA582746, F06350, AT734852, AL053784, AH459733, AL044701, AL280601, AL345497, T90477, AA229159, AA526643, AL078409, AT85705, AL041375, H47835, AA579130, W242279, AA303049, AT282629, AA847585, AA342238, T17332, AL114557, AA873303, AA847047, AA558404, AA158549, AA715955, AA720582, AT62528, AA614010, AA452887, AA215470, AL587467, AT924644, T17135, AW162227, AB58148, AL609972, H53284, H5452, AA598736, AW338268, AL720774, AW272294, AA225406, AB80889, T07974, AA581247, AL870453, AL865776, AP000152, AC004983, AC005067, AC005539, AC007731, AC005500, AC006211, AC006130, AP000212, AP000134, AC006651, AC010205, AF053356, AL031577, AC004966, AL049569, AC004985, AC005409, AC004893, Z95114, AC007216, AL034420, U95740, AC004813, AC004033, AF111167, AC005049, AD001527, AC006649, AC002492.

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					HA7804, and AC004968.
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HNHGE68	7622	753052	1 - 531	15 - 545	
HNHGE44	7623	683294	1 - 516	15 - 530	AA458759, AA457094, and AA679166.
HNHGE31	7624	698046	1 - 367	15 - 381	
HNHGE24	7625	677234	1 - 420	15 - 434	
HNHGE12	7626	970722	1 - 420	15 - 434	
HNHGD08	7627	959494	1 - 474	15 - 488	T54356.
HNHGC92	7628	792740	1 - 407	15 - 421	
HNHGC91	7629	790199	1 - 212	15 - 226	N64605, AC004902, and AF086089.
HNHGC45	7630	720747	1 - 403	15 - 417	D819246, H55330, AP000556, AP000557, and AC007308.
HNHGC32	7631	699286	1 - 413	15 - 427	Z32887, Z33539, T18397, AL526078, AL557864, D59751, D50992, AL555639, AL535660, AL536138, AL557262, AL541336, AL541205, AL525500, AL525556, AL557082, AL557533, AL540903, AL541365, AA058620, AL557809, C14228, H65400, AL525316, AL537084, AL557317, AL525302, AL557312, AL557731, AL541321, AL525852, AL536150, AL541353, AL525661, AL541075, AL557258, AL557602, AL525757, AL557238, AL536070, AL557155, R29657, AL541450, AL546829, AL541034, AL557241, AL547177, AL540974, AL557154, AL535828, AL553813, AL557041, AL541346, AL541154, AL557408, AL541027, AL557039, AL535994, AL557810, AL541048, D30843, AL557543, AL541362, AC2300, AR050070, A62298, A82595, A82593, U94592, Z30183, AP006072, U45328, and A8025466.
HNHGC21	7632	670949	1 - 411	15 - 425	T16056, AA339752, AA346514, P00736, AA341336, AA594746, AA641400, T01420, AA508026, AA361273, W30861, R01434, AA492140, AL265800, AA630773, AW129950, AL547110, C15093, AA669616, NZ7615, AL192839, AA3551201, AA649722, F02342, AA316183, AA347170, AA078691, AA704643, AA325597, AA053551, AA332094, AA348504, H86097, AA886992, AA078537, T63030, AA363368, D19768, AA332204, H80306, N58674, AA357552, AA325787.

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HNHGC20	7633	859991	1 - 413	15 - 427	
HNHGC19	7634	668692	1 - 393	15 - 407	
HNHGC08	7635	962224	1 - 258	15 - 272	AL050403.
HNHGC07	7636	953414	1 - 424	15 - 438	
HNHGB12	7637	970726	1 - 663	15 - 677	AI493432, AI765576, AI083682, AI151327, AI138460, AI219026, and AA846762.
HNHGA53	7638	973803	1 - 521	15 - 535	AL044060.
HNHGY68	7639	752305	1 - 519	15 - 533	AA223974.
HNHFX08	7640	959475	1 - 494	15 - 508	AA601442.
HNHFX10	7641	961275	1 - 309	15 - 323	
HNHFX08	7642	959484	1 - 403	15 - 417	
HNHFX07	7643	953403	1 - 437	15 - 451	AA224213.
HNHFX49	7644	975415	1 - 754	15 - 768	AI239477, and AW303399.
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HNHF03	7652	924606	1 - 520	15 - 534	AA278805.
HNHF04	7653	506283	1 - 313	15 - 327	
HNHF05	7654	486847	1 - 551	15 - 565	
HNHF06	7655	576414	1 - 483	15 - 497	U91323.
HNHF07	7656	973273	1 - 604	15 - 618	
HNHF08	7657	903741	1 - 467	15 - 481	D80212, D59619, D80210, D80240, D81030, D80166, D80219, D51423, D58283, D51799, D80253, D80195, D59859, D80193, D80188, D80391, D80227, D80022, D59927, D59889, D80196, D80045, D80269, D80043, D80038, D80366, C14429, D59275, D57483, D59502, D80134, D80024, D50979, D59610, C75259, D80378, T03269, D80268, C14014, D50995, F13647, D80241, C15076, D80949, D59787, D80164, C14389, D81026, D58253, C14331, D51250, D51060, AA305409, D51079, D59467, D80168, D81111, AW178893, C14227, AW177440, AA285331, D80522, Z21582, D51022, AW179328, D80064, A910186, AW178775, AW378532, D80248, D59695, AA305578, C14298, AW377671, AW369651, AW352158, D80251, A905856, D52291, D51097, D80133, AW178762, AA514188, AW177501, AW177511, AA514186, AW360834, C05695, C14407, AW360811, D80439, AW352117, D80132, D80157, AW176467, AW378540, AW375405, D59273, D80014, AW179220, AW366296, AW360844, AW360817, T11417, AW375406, AW378534, AW179332, AW377672, AW179023, AW178905, AW377676, D80302, A1557751, AW352171, D51759, AW178906, AW352170, AW177731, D80247, AW178907, AW179019, AW179024, D51213, T02974, AW177505, AW179020, AW360841, AW178909, AW177456, AW352174, AW179329, AW178980, AW177733, AW378528, AW178908, AW178754, AW179018, T03116, AW179004, AW179012, AW178914, AW378525, AW367967, D51103, D58246, D80258, AW177722, AW177728, AW378539, D59653, AW179009, C06015, AW178774, AW178911, AW378543, AW352163, D59503, C14077, D58101, AW178983, AW352120, AW178781, T48593, D59627, A1557774, AW177723, D45260, AW177508, C14975, A1553850, AW378533, C03092, H67854, AW367950, AW177497, D80228, H67866, AA033512, AA809122, A1525917, A1525923, AW178986, D51221, AW177734, D59317, D45273, C14344, D59474, C14973, D50981, A1525920, AA514184, C14957, D60010, C14046, A1555686, A1525227, D59551, A1525235, D60214, A1525215, T03048, A1525912, A1535961, A1525242, AW378542, C05763, A1525925, A1525222, D51053, D31458, C16955, Z33452, A62298, A62300, A84916, A1321110, X67155, A67220, A78862, D89785, A23909, D56022, D34614, AR018138, Y17188, D88547, AR025207, X82626, AR008278, AF038696, I82448, X68127, AR028859, AB012117, A85396, AR066482, Y12724, A85477, A44171, U87250, I19525, A86792, X93549, A82595, AR060385, A94995, AF15125, AB002449, AR008443, I50126, I50132, I50128, I50133, AR060138, AR066488, AR016514, A45456, A26615, AR052274, I14842, AR064240, AR066490, A43192, A43190, AR038669, Y09669, AR066487, I18367, A30438, D88507, AR054175, D50010, Y17187, A63261, AB033111, AK008277, AR008281, AR008408, AR062872, X70867, AR016691, AR016690, U46128, Z32749, A64136, A68321, D15509,

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HNHFH23	7638	675942	1 - 721	N31451, and N41451.
HNHFH79	7659	638126	1 - 267	AA136943, T02866, AA315673, AA179174, AA361929, AL120645, AA736954, AA834194, AA778965, AA577825, AA578664, AA688252, AA218852, AA983440, AA775329, AA486768, AA167544, AA603182, AA583392, AA582052, AA618459, AA662979, AA601625, AA188692, AA935394, AA584747, AA167492, AA180454, AA680277, AA834071, AA665367, AA663004, AA630430, AA713821, AA219034, AA714486, AA584834, AA486697, AA5904875, AA169233, AA773954, AA384435, T65750, AA489989, AA121767, AA577875, AA5948151, AA646930, AA584534, AA451922, AL047233, T03057, AA538493, AA601406, AA167538, AA593497, AA169344, T59619, AA663003, AA720805, AA720777, AA489999, AB802838, AA668699, AA80751, AA490015, AA211180, AA679143, AA721049, AA457219, AA577765, AA775210, AA586654, AL267399, AA577803, AA601418, AA577840, AA490246, AA577765, AA593542, AA458672, T49955, T03259, AA613193, AA564831, AA594081, H85238, AA662085, AA169228, AA169557, AA668372, AA487519, AA457507, AL253435, T56669, T48647, AA581910, AA976274, AL043280, T55332, AA584907, AA179985, AA434080, AA188953, M78222, AA563828, AA485874, AA773127, AA490019, AA586665, AA121840, AA601628, AA983272, AA490032, AA489850, AA668327, AL180281, AA490054, T59685, AA584459, AA581901, AA458783, AA782269, AA384627, AL119618, T59877, AA594706, AA778953, AA515456, AA485341, AA456926, AA989133, AA722310, AA774071, AA774057, AA668161, AA307312, AA126847, AA456941, AA601412, N25053, AA714107, AA772877, AA169346, AA490183, AA169351, AA180465, AA384768, AA613153, T49316, AA169553, AA325093, AA594173, AA663091, AA780820, AA357787, AA456943, AA584466, AA827415, AA112323, AA112316, AA664023, AA180338, AA601464, AA594015, T90675, AA679325, T57694, AL60363, AA593549, AA457652, AA121876, AA174132, AA761025, T99938, AA582414, T39228, AA680290, AA663500, AA594147, AA683281, AL267828, T96260, AA458713, AW129720, AA136934, T02841, AA584502, AA584625, H92599, AA657923, AA581172, AA456979, AA119051, AA136926, AA1780730, T61944, AA487603, AA594753, AA587520, AA780571, AA421028, AA668406, N23864, AA490010, M77951, H70919, AA487044, AW394251, T37385, T03243, AA174113, T94872, AA121875, T94346, AA602130, AA176467, T50445, AA663223, AA179813, T93559, AA668285, AA577921, AA581666, T63467, AA834066, AA277773, AA214189, AA715716, AA663376, AA188838, AA188613, AA176906, AA457548, AA218913, AA601402, AA715738, AA490150, T47178, T41239, AA668241, AA721000, T92774, AA668412, AA218670, AA720943, AL138058, AC007792, AC003686, AL133249, AC005326, AL135784, AL035397, AC005019, AC004610, AF000078, AL096817, AC004886, AL049828, AL117337, AC011198, AL049589, AC006962, AF011889, AC006989, AF036235, AL022353, Z69648, AF198097, AC002478, AL031122, AC006336, AL022171, AF000952, AC003086,

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T86212, F15260, and AC005369.	15 - 125	
N39725, and N31375.	15 - 385	
AF1679782, AA659324, AA812038, AA601218, AL045077, N79238, AW021774, AL769271.	15 - 411	
	15 - 456	
	15 - 096	
	1 - 408	
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HNHF08	7662	576448
HNHF021	7663	842707
HNHF083	7664	781217
HNHF018	7665	666524
HNHF020	7666	668909
HNHF003	7667	515701

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HNHEL72 HNHEL34	7669 7670	760706 706636	1 - 321 1 - 558	15 - 335 15 - 572	AA174128 AA10476, R05546, R24833, AW402115, AA356328, AA279222, and AC006011.
HNHEL86	7668	490390	1 - 493	15 - 507	AC004217, AL049758, AL078593, AC005324, AC012627, AC004106, U91318, AC005696, Z68276, U91323, AL021453, Y18000, AC009464, AC002039, AC0071676, AC006441, AC005585, and U91325. AW238712, AA715955, AL280266, AA351808, AA158549, AL045476, AA936718, AD053977, AA551056, FI77000, AD242502, R70883, AA309634, AA838091, AH57596, AL134615, AA654482, FI77000, AD049630, AA650947, AD280535, AA371534, AL198718, AA054418, AL557422, N95156, AL870453, AA516320, AL621242, AA362697, AA634926, AL610941, AA728861, AL753536, T07878, AL624379, W24312, ALW268322, AL079196, AA570441, AL1272649, AA487569, AA071045, AA526424, AB969639, AA074351, AH446561, HH5808, AL01283, AC007637, AC006006, AC006965, AC002511, AC002430, AC007384, AC008273, AC003379, AC005520, AC002302, Z84487, AC006236, AC000120, Z82198, AC004820, AC002091, Z83843, AC002312, AC003051, AC005015, AL137191, AC006023, AL078477, AC011456, AL049589, AL109842, AC006511, AL023575, AL133312, AL109623, AL133246, AL022718, AL049832, AC002476, AC006317, AC005529, Z85987, AC002465, AC006515, AL133163, AL031000, AL050309, AP00245, AL109839, AF001549, AC005887, Z99495, AC005013, Z95116, Z82205, AL049834, AF031078, AL109172, AC003012, AF030876, AC006924, AC006013, AC000039, AC003010, AL031650, AC005102, AC006115, AC005670, AL049825, Z97181, AC002558, AL021396, AC005839, AC007934, AC007225, AC003108, AC005746, AP000077, AL109963, AC002527, AC005839, AC003010, AL031650, AC005102, AC006115, AC005670, AL049825, Z97181, AC002558, AL021396, AC005839, AC007934, AC007225, AC003108, AC005746, AL031864, AL096712, AC005084, AF172277, AC006035, AL121754, AC002519, AC002425, AL12020, AC005988, AF118808, AC004750, AL133241, AL034429, AC004647, AC007099, AL109809, AL022336, AL133224, AC004659, AC005355, AC004814, AC005089, Z98304, Z93244, AL109738, AC004973, AC003533, AC007388, AC006065, AL096776, AC008009, AL031678, AC002531, Z82193, AC002991, AC006952, AC006600, Z82201, AC006365, AC006062, AL133216, AC004749, S42653, AL031985, AC002126, AC004905, AC005572, AC007308, AL031533, AC012627, AC005902, AC005972, AC003043, AC005156, AL031673, AC002429, AL031584, AB017602, AL031133, AF053356, AL031622, AC004025, AC005057, AF043945, AC008928, AC005625, AL031846, AC003070, AC004531, AF002223, Z82194, AP00513, Z86090, Z85996, AC007055, AB023049, AC004894, AP000692, AC005533, AC000052, AL049694, AC004881, AC005763, AL022326, AC004894, AP000692, AC005533, AC000052, U91322, AF190465, AC004842, AF088219, AC006312, AC003685, AL050350, AC005034, AL109628, AL033504, AL035661, AL079295, AC002470, Z68756, AC007051, AC005786, AL031121, AC005535, AC006211, AC005225, AC003684, AC006430, AC004938, and AC005209.

HNH227	7671	506284	1 - 461	15 - 475	H10749, and 299127.
HNH269	7672	757649	1 - 522	15 - 536	
HNH278	7673	800165	1 - 303	15 - 317	
HNH220	7674	669763	1 - 458	15 - 472	H06131.
HNH290	7675	888553	1 - 305	15 - 319	A1672925, AA639776, AL033376, 293023, AL049576, AC006581, AC003101, AC005015, AC002302, 297054, AC0035419, AC002331, AC005089, AC012384, AC002430, AC007384, AC005094, and AF069291.
					A262778.
HNH237	7676	419752	1 - 286	15 - 300	H5523, and AL022329.
HNH228	7677	973296	1 - 460	15 - 474	
HNH271	7678	760464	1 - 194	15 - 208	AA654661, A1345366, A1310873, AA167792, F00107, AL041894, A1926728, AL118991, A1253382, AA551552, AA504694, A1085242, AA584438, AA833896, AA833875, AA376760, AA579205, AA581170, H72530, A108575, AW275498, T59724, AA586661, AA630145, M77893, AA224238, A1915205, AA594072, AA551003, AW328000, AA559329, AL050312, AC003037, AL121915, U52111, 269720, AL049569, AF030453, AC007999, AL031283, AL035587, AL035398, AL031281, AC005067, AL034420, AC001231, AC005512, AL133245, 297181, AC002316, AC002352, AC005320, AC005730, AC006571, AC004821, AC003693, 282206, AC004975, L47234, 295116, AL022329, AP000349, AL021579, AC002300, AC007546, 298048, AC004622, AL023879, AC004000, AL035685, AP000505, AC005940, AC007546, 298048, AP000065, AL049766, AC005859, AC007774, AC007666, Y14768, AP000250, AC006285, AL079342, A1066345, AC005071, AP000350, AC005225, Y178833, AC005821, AL034429, AL049776, AC002404, AL121655, AC005288, AC007406, AP000261, AC004051, AF001552, AL078634, AF196969, AP000558, AC004659, AC005722, AC005088, AC005095, M89651, AC007686, AC002039, AC007845, AL035422, AC007541, AC016025, 293241, AL022316, AL049646, AC006023, AC005695, 294160, AL021707, Y10196, AC005516, AC004967, AP000240, AP000035, AP000100, 284466, 297630, AC004263, AC002398, AC007225, AF088219, AP000127, AP000205, AC007227, AC005183, AL032384, AL031594, AC005578, AL024498, AC009516, AP000030, AP000211, AP000133, AP000245, U85195, AC005632, AC005197, AL133448, AL008718, AC005971, AC006480, AC006449, AC004886, AC004129, AP000096, AP000555, 298200, AC005952, AL049830, AB020866, AL049759, AL031255, AC006241, AB000658, AC012627, AL031846, AC005786, AC004849, 297989, AL133353, AC004491, AL133382, AC007664, AL109759, AP000512, AC003046, AC004765, AC002525, AL022576, AC006328, AL031681, A1006996, AC002430, AC004675, AC004386, AC006430, AL031733, AL133371, AC003042, AC005190, AC008040, AC005189, AL031295, AF006779, AB023048, AL109798, AL021392, AC009946, AL121653, AL049873, AC007384, AC000029, AC002378, AC004458, AC007172, AC009946, AL121653, AL049873, AC007384, AC000029, AL033521, AL122021, AC005081, AC007050, AC007055, AC003103, AC006530, AC004131, AC002996, AC005180, AC007390, AL022165, AC005060, 284477, AC004878, AC005328.

HNHEF53	7679	576417	1 - 350	15 - 364	AC002504, AC005921, Z69705, AC006026, AP001056, AC005358, and AL024507.
HNHEF08	7680	958854	1 - 494	15 - 508	AA1809125, AT732151, A1962030, A1078409, AT755214, AT754567, A123968, AT754105, AA738356, AA769130, AA536040, AA630854, A1653776, AA579130, AW082104, AA947369, AA410788, AA225406, AT751180, AT792464, A1186438, AA176978, F53574, AT772906, AA515939, A1635028, AW277294, A1826761, AA492495, A1017251, AA126635, A1874201, A1801563, AA634991, A1249688, AA714288, AA297666, A1038842, AA704393, T57767, A1499954, A1923052, A1038304, A1866487, AA579152, AA714110, AA832444, A1820963, AA228778, AA419389, A1446500, A1313536, A1471572, AA251356, A1569100, A1041315, A1284045, AA584493, AA702605, A1355007, T09219, AA713705, AA541532, AA527209, AA011037, AW192599, H23467, AW275953, AA563770, R81017, AW271174, A1079734, AA487226, AW237905, AA904211, AA525807, A1056177, A1923451, AA130647, AW157005, AA598927, AA557911, AA765925, AW270768, A10572813, A1053784, A1343169, AA258824, AA665021, A1452836, A1291037, A1923458, AW275432, A1244157, AW276935, A1076236, A1045476, A1004591, AW271904, AW151247, A1446452, AA644090, A1053977, F03525, A1870453, AA456924, A1689019, AA197218, A1365625, AA746911, A6601278, A1150670, A1619738, AW243808, AA311313, AW023111, A1038606, AA176604, AW301809, A1683514, A1133013, AW088665, AW265006, A1133377, AW327624, AA492584, AC005412, A1236701, A1031283, Z98946, AC006430, AC005280, AC005531, AC005500, AC000353, AC005089, AC002302, AC006080, A1022165, AC005180, Z97180, AC006511, AC009509, AC005089, A1009183, AC002563, AC004805, AC004033, A1024498, AC006271, AC004067, A1015355, A1117339, AC004000, A1139054, U17576, AC005971, AC005822, A1022320, A1022731, AC005229, A1049776, AC006112, AC006111, A1031053, AC007371, A1049829, AC005072, U95739, AC006011, AC005406, AC006512, A1023060, A1050307, A1133246, A1049779, A1035089, AC005086, AC006211, AC012384, AP000432, A1031681, A1136168, AC005519, AF134726, A1031985, AC004687, AC005841, Z98941, A1031287, AC006571, AC006116, AC005324, A1000671, AC007308, AC00159, AC005736, A1035086, AC004050, Z83845, A1008718, A1133353, AP000510, AC004859, A1035420, AC005231, AC005399, AC003101, AC007458, A1035400, AC004685, AC002301, A1031311, AC004858, A1035083, A1080243, AC005722, AC005800, AC006441, A1035659, J03071, Z93244, AP000356, AC004065, A1133216, A1121769, AC005821, AC004087, A1022336, U91318, A1117258, Z85596, AP001053, A1031055, Z82244, AC005922, AC005696, AC002470, AC002477, AC003163, AC004890, A1024509, AC003041, Z99716, AC002395, AC006930, AC006142, A1031643, AC004884, AC005409, AC004049, AC005919, AF047825, AP000065, AP000123, AP000055, AP000170, AC006312, AF196779, AC010197, AC005899, A1034351, AC006537, A1049712, AC005015, AC003692, AC005993, A1022345, AC004453, A1049775, AF165926, A1033376, AC006449, AP000502, AC005562, AC010205, A1035413, AP000044, AP000112, AC004811,



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					R94571, AL247753, and AA678053.
					AA441960, AA372392, AL358948, AL160732, and AL022165.
					W32067, and AF136745.
					W01704.
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HNHDV16	7689	422903	1 - 347	15 - 361	AA458568.
HNHDV95	7690	559341	1 - 745	15 - 757	
HNHDV93	7691	792467	1 - 465	15 - 479	
HNHDV16	7692	863116	1 - 592	15 - 606	
HNHDV783	7693	974277	1 - 425	15 - 439	

HNHDT33	7694	576483	1-154	15-168	
HNHDT32	7695	573332	1-110	15-124	
HNHDT19	7696	573355	1-145	15-159	
HNHDT12	7697	576464	1-132	15-146	
HNHDT05	7698	932223	1-431	15-445	
HNHDM15	7699	660509	1-384	15-598	TI9850, AA456956, and TI9851.
HNHDM40	7700	574312	1-309	15-323	W38300, W38191, AP088040, and AL024498.
HNHDM03	7701	924895	1-320	15-334	
HNHDM07	7702	953883	1-383	15-397	
<p>             T49747, AA077952, AL018726, AA774119, AA805901, N09715, AL570261, AA340003,              AL354369, AL064952, AW193432, AL376197, AL567941, AL459866, AA843450, AA229785,              AL017733, AL914706, AL890923, AW029038, Z22626, AA468289, AL732682, AA218645,              AL046409, TI2272, N25927, AW304584, AL138421, AL804544, AL079935, F28576, AL569086,              AA973575, AW438539, AL038279, AW337985, AL079910, AW130799, AL454536, AL4594078,              AL890052, AL963786, AW103918, AL963263, AL046746, AL079645, AL042856, AA394078,              AL038785, AL003743, AL564589, AL120483, AL761471, AA569284, AA344959, AL041368,              AL049722, AA535661, AA827383, AW117936, AW276827, C06327, AL289067, AW088202,              AL433284, AA977743, AA515051, AW440836, AL610159, AA339487, AL431303, AL223626,              AA664535, AA443390, AL567674, AW104748, AL118567, AL474713, AL951889, AL951928,              AA384502, AW264969, AL246061, H92005, AA633068, AL887483, F24792, AA664248,              AL003172, AA635417, AW074398, AL054090, AL963720, W60516, AL192740, AA178953,              AL251241, AL249853, AL205126, AL039309, AL284543, AA470581, AL254770, AA551809,              AL802576, AL251944, AA584489, AL251034, AL251203, AL251284, AL469172, AL147353,              AL250552, AL547286, AA828662, AA460880, C05755, AL421213, F31204, AW131034, F19258,              AA515128, H37821, AL053465, AL133164, AW339568, AL653783, AW192199, AC004923,              AL047063, AL024497, AC006296, AC007911, AL033381, AC005184, AL031733, Z77894,              AF140163, AL024497, AC006296, AC007911, AL033381, AC005184, AL031733, Z77894,              Z93023, AC005596, AC005370, AP000211, AL017602, AC006270, AL022333, AC006966,              AL031662, Z84478, AC000378, AC010197, AC007938, AC00159, AC002451, AC006064,              AC004462, AL021453, AC005040, AC006261, AC006132, AC005661, AC006205, AC018633,              AC005062, Z83827, AL033504, AC004844, AC004821, AL035089, AC005771, AL132777,              AC004186, AC004189, AL031286, AC006999, AL021878, AC004848, AC004859, AC006312,              AC002985, AC005251, AC005249, AL136297, AC005409, AC003553, AC007731, AC004506,              AC006263, AC005247, AC007970, AC005500, AC000026, AL117330, AP000093, AC003957,              AP000237, AF107258, AC002350, AC004885, Z85966, AL031034, AC005342, AC002469,              AC002382, AC006115, AC009223, AC006057, AC002059, AF169121, U52112, AC004493,              U77080, U77078, AL031721, AC004230, AC004000, AC008115, AC005341, AC005899, Z81370,              AC010077, AP003627, AC004814, AP000193, AL034451, AP000050, AC003964, AP003111,           </p>					

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HNHDD52	7703	520297	1 - 325	15 - 339	

				W80853, AW410086, AW304536, AL818495, AV339111, W76645, AW439646, AB267116, A345704, A3350859, AY78981, AB14735, AJ345794, N54301, AA528405, AL561060, AC002064, AL049765, AC010206, AL031114, AC006196, AC005385, AL049871, AL021937, AC005213, AC003689, AF196970, AL121576, AC009263, AC006249, AC005820, AC005872, AC005288, AL031650, AC005562, AC003074, AC003691, AC003678, AC004028, AC008014, AP000500, AJ229041, AL078387, AL123353, AC007151, AL022329, AL137191, AC008039, AC000004, AC005039, AL078638, AC007917, AF001549, AL121852, ZB2195, AP000506, AC000119, AL049835, AC005480, AL035695, AC007344, AB000882, AC004775, AC007090, AC004706, AL031965, AC004757, ZD2542, AC000066, AC006539, AL121694, AC007671, AC004822, AC005962, AL121757, AC007242, AL022399, AF196972, AL008723, AC005951, AC008040, AF165175, AC004010, U96409, AL133304, AL010770, AP000473, AC006160, AC007581, AC007533, AC004050, AC005146, AL136297, AC007100, AC004745, AC004184, AC007373, Z95400, AC004821, AL050307, AL034554, AC004900, AC004825, AF106564, AC004964, AL009172, AC006353, AP000014, AC005280, AC002457, AL022394, AC004009, AC002367, ZB2838, AC004539, AC005050, AL031737, AL023799, AC004003, AL094801, Z98946, AC004692, AC007032, Z94056, AL117328, AP000476, AL034407, AC004103, Z97055, AC006079, AC003658, AL022400, AC006144, AC005393, AC006659, AC006344, AL031673, AL109834, AP000245, AL031429, AC006968, L81648, AC008372, AF000244, AC004223, Z95329, Z84482, Z93341, AC007263, AL049814, AP000949, AC003051, AC006206, AP000126, AP000204, AC002412, AC005358, AC004769, AC006502, AC004889, AL031012, AC005516, AC004703, AL031588, AC007021, AF129107, AC004921, AL133289, Z98200, AF207550, AC010722, AL020997, AC006948, AC005224, AF117829, AC003665, AC005083, AC004051, AC010722, AL020997, AC006948, AC005224, AF117829, AC003665, AC005083, AC004051, AC007681, AC008124, AC006195, AL079305, AC003087, AC009802, AC016831, AL136295, AC002538, AL031054, AB019439, UB0460, AC008275, AC007377, AC007877, AL034370, AL096791, AC006023, AC006212, AC006450, AL117537, AC005029, AL035425, AL031681, AL005370, AL109753, AL079338, Z98172, AJ229042, AC005018, ZB6061, Z97180, AL003698, AC007425, AL109733, AC002449, AF048862, AL031665, AC006365, AL109659, AC005255, AC005040, AC007510, AB020863, AC005284, AL035397, AL009029, AC006198, AP000493, UB3131, AL096699, AC005193, L109852, AC005782, AC004216, AL031906, AC000523, AC003075, AC004833, AC006004, AC018769, AL049776, AC004097, AC004067, AC006501, AC002385, AC004668, AD000091, AL049563, and AC006075.	
HNHDC29	7704	904546	1-207	15 - 221	U87223, and I75757.
HNHDB69	7705	757760	1-402	N46632	
HNHCB284	7706	782897	1-673	15 - 687	AA384373, AA629036, AA558801, AW337237, AL133373, AH31434, AG444090, AL138182, AW022655, AL069047, AA728873, AL536857, AB89566, AC005274, AP001069, AC007058, AL132642, AI251973, AC005697, AC004854, AC004832, AP000330, AP000690, Z98304,

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HNHCY96	7707	796547	1 - 737	15 - 751	
HNHCY07	7708	953878	1 - 685	15 - 699	AL091257, AC002430, and AC007384.
HNHCY06	7709	936061	1 - 261	15 - 275	A1341576.
HNHCL08	7710	959944	1 - 357	15 - 371	T89316.
HNHC094	7711	796745	1 - 254	15 - 268	AA780572, and N22524.
HNHC069	7712	754189	1 - 350	15 - 364	AA242903, and AW167557.
HNHC039	7713	705641	1 - 281	15 - 295	AA191568, and AC002111.
HNHC069	7714	757751	1 - 354	15 - 368	H53890, and AL902634.
HNHC111	7715	964952	1 - 198	15 - 212	
HNHC132	7716	861673	1 - 586	15 - 600	AF112462, and AR035954.
HNHC043	7717	574074	1 - 203	15 - 217	
HNHC032	7718	574080	1 - 148	15 - 162	
HNHC033	7719	702679	1 - 641	15 - 655	
HNHC027	7720	668255	1 - 451	15 - 465	
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T89446, AW298359, and AL081000.	15 - 382			
AC004531, and AC006007.	15 - 422			
AA490179, AA586883, and AC007263.	15 - 282			
AA808994, AL044322, AF146191, AL122020, AC004828, and AC005067.	15 - 305			
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HNIB48	7727	860125	1 - 535	15 - 549	<p>AL541374, A4585101, A1525556, A1525431, A1540967, C16300, A1541365, A1557807, A4585439, Z28335, A1541307, A1541017, A1541523, A1541535, Z30131, A1546999, A1557799, A1541514, A1546828, A1525306, A1547039, A1535639, A4585476, A1541510, A1546891, A1546945, A1526194, A1525316, T11028, A1546855, A4585453, D61254, A1557238, A1526140, R29445, A1557731, A1541013, A1525328, R28735, A1541534, A1541390, A1541345, A1556967, A1546875, A1525320, T23957, A1557262, AL037436, A1541508, A1557787, A4585356, T41289, AL037435, D57491, A1541509, A1525653, C16305, A4585434, A1529433, A1540882, R29177, A1526187, A1557796, A1526073, AL040463, AL039915, AL043612, AL041197, AL040155, AL041346, AL041096, AL047012, AL041358, AL041277, AL041163, AL041098, AL040621, AL043538, AL041324, AL040464, AL044162, AL041086, AL043496,</p>

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					AA176868.
					AI042580, AB028499, and D87469.
					R42061, and AC006561.
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					AC004849.
					AC006443.
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					AA017301, AA054227, and R65894.
					AI361882.
					W32160, H12089, F11591, R24785, R07709, AF152473, AF152303, and AC004776.
					AA732587, AA747437, AA207014, AA047644, AW015259, AA283881, and AA262271.

HNHAB36	7747	596822	1 - 954	15 - 968	
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HNHAB15	7748	973675	1 - 626	15 - 640	AC004158, AC004752, AC005512, and AC005726.
HNGPR43	7749	860142	1 - 291	15 - 305	H65099, and AA601342.
HNGPP74	7750	974046	1 - 724	15 - 738	
HNGPNS4	7751	947104	1 - 466	15 - 480	
HNGPMS5	7752	972821	1 - 292	15 - 306	AC007429.
HNGPL05	7753	950134	1 - 1119	15 - 1133	AA773970, AA768044, and AC005332.
HNGPL05	7754	974049	1 - 528	15 - 542	AC004341.
HNGPI87	7755	860162	1 - 491	15 - 505	AA169191.
HNGPH83	7756	974045	1 - 217	15 - 231	
HNGOZ40	7757	969158	1 - 607	15 - 621	AA132013, AW014651, A1675608, A1248426, AW071964, A1480054, AW002112, A1248788, R44057, A1890868, W88679, A1566382, A1014337, A1768893, A4404555, A4992522, AFI55098, and AFI35016.
HNGOY68	7758	860169	1 - 676	15 - 690	A1073971, and AW058089.
HNGOY32	7759	954991	1 - 739	15 - 753	AA601697.
HNGOP63	7760	973415	1 - 760	15 - 774	AC005343.
HNGOP40	7761	860182	1 - 719	15 - 733	AA137024.
HNGOQ88	7762	860179	1 - 351	15 - 365	T70563.
HNGON56	7763	974038	1 - 724	15 - 738	
HNGON24	7764	860183	1 - 707	15 - 721	AA573222.
HNGOK04	7765	972752	1 - 598	15 - 612	AL023882.
HNGOF70	7766	860195	1 - 301	15 - 315	AA236911, AA417620, AA824640, AC007216, U95742, AC002045, AC002039, U91326, AAF001549, and AC002544.
HNGNY72	7767	860198	1 - 528	15 - 542	AA593483, AA585098, AA585325, AA170832, R29657, T18597, A18585101, R45895, D53161, R28735, R29445, D57491, AA585155, C15066, AA585439, D59751, Z32822, AA585378, Z32887, A1557262, R28892, A1557864, A1541356, C15069, AA585329, A1526140, A1541365, A1555500, A1557740, R28965, D61185, Z28355, D59436, A1526184, R29218, D60844, D60765, D54897, A1526078, AA585476, A1557731, A1525316, A1557763, R28967, R28895, A1541205, A1541535, A1546971, C16315, A1525556, AA283326, A1541383, A1541517, A1547250, A1546875, A1526016, D61254, A1557727, A1557734, A1546999, D53472, AA585356, A1557718, A1557787, C16293, D53447, A1541013, C16294, C15120, D52835, A1547039, D55233, A1525306, D78824, C16300, A1541374, C16292, A1557084, A1541346, A1546945, A1525431, A1526191, A1557807, A1557155, A1547196, C16305, C15762, A1557408, A1557758, A1541523, Z30131, A1557809, R29179, A1525339, A1541034, A1526194, C15737, A1540903, A1546921, A1541307, A1526112, A1546996, A1540967, AA585453, A1546891, D60730, A1547006, A1557602, Z33559, A1540974, C16296, A1547202, A1525320, A1557279, D57186, AA585430, A1557808, R29177, A1541321, A1526024,

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HNGNY16	7768	806017	1 - 628	15 - 642	AA593439, and AA601626.
HNGNY02	7769	914035	1 - 546	15 - 560	
HNGNX66	7770	978626	1 - 655	15 - 669	
HNGNU85	7771	974037	1 - 688	15 - 702	
HNGNS91	7772	973432	1 - 560	15 - 574	
HNGNN81	7773	974124	1 - 511	15 - 525	
HNGNN01	7774	915226	1 - 654	15 - 668	AA776772, A1754955, A1803090, AA491814, A1053672, A W022379, A W168342, A1245679, AA181773, A1634227, A1273185, A1281881, A W088038, A4441788, A4457592, A1245679, W79504, T08638, A1H71481, A1334443, A W303196, A W274349, F36273, T05101, A1564185, A W301350, A1538343, A6400772, A1674873, A A132914, A1291268, A1291124, A1273193, AA371533, A1444644, A177061, A1801591, A10716616, A284179, A1334435, A W407578, A1338486, A4646642, A1268599, A107788, A W300625, A3640224, A W406447, C06033, A S81903, A4669251, A1432270, A1624698, A061227, A1120502, A W419262, A514737, A A10370, A4831375, H91305, A1888008, A4665021, A1281903, A1143242, A A349366, A132120, A1589251, A1352078, N25296, A A744031, A1801701, A1287451, A A398386, A1827651, A P150152, A W151896, A A569387, A1817516, A A134367, A1364020, A1046898, T07451, A A368936, A W162489, A1653905, A W270270, A W073470, A A451612, A1471543, A A288356, A1561255, A1640702, H13757, A W482681, A1537030, A1133164, A A482703, A A862176, A A713891, A A528516, A1415544, A1754253, A5778391, F19012, A1299050,

HJNGN78	7776	860216	1 - 366	AA126935, AA807689, T50099, H65096, R07589, T50151, AL801031, R93174, W90100, AC004259, AP007003, AC004600, AC008124, AC006509, AC004815, AP050154, AC005043, AC005049, AC005274, AC008083, AL109952, AC007193, AC005520, D28126, AC005081, AB015335, AC007889, AC002044, AC005015, AC006126, AP000704, AL033418, AC004551, AC005300, AL050318, AC004973, AC003029, AC007314, AC006026, AF069489, L44140, AC005300, AL050318, AC004785, AD000091, AC005969, AC010170, AC004792, AC005412, and AC002564
	7775	860212	1 - 475	AA533725, F10924, N63332, AA6604897, AF732186, AA652057, AA323749, AL352114, AA610491, AL709365, AF192154, AA838140, AL16799, T06828, T08914, N71930, AA665330, AA661948, AA513293, AA670468, R97934, AW072387, AC004460, AC006328, AC005630, AC005154, AC006312, AL096701, AL031668, AC004890, AC007242, AC002448, Z97630, AL132712, AC004099, AC005488, AC007536, AF077058, Z82205, AF001549, AF193435, AC005233, AC005324, AC007050, AC006014, AP001053, AC005332, AL079303, X750555, AL050318, AC004783, AL031283, AL133448, M19482, X52851, AC002444, AC007488, X74558, AC005544, AC004033, AL035587, AC005037, AC008273, AC006353, AC005091, AP000207, AP00129, AF121781, AC002404, AC002994, AF053356, AC006601, AL13126, AP00439, AL087129, AL020993, AF152365, M87919, AL096712, AC005839, AL022721, AC009946, AF129756, AF165926, AP000130, AP000208, AL022332, AP000354, AP000018, AP000247, AC003070, AP000168, AC008282, AL133371, U73169, Z84480, AP000460, AC005175, AC006205, AC004825, AC007229, AC002549, AC007565, AC008055, AC005624, AL133249, AC008079, AC004884, AC000004, AC007040, AC003664, AL049843, AL035413, AF196971, AC007324, AC008372, AC008101, AL031053, AC003043, AL033521, AL031286, AC006039, AC006487, AL021707, AB020866, AC004765, AL050307, AL021878, AL035458, AL009179, AP000502, AC005620, Z97556, AC002090, AC005071, AC03007, AC007159, AC005041, Z83840, Z15025, AC010382, AL078639, AL078477, AL035457, AC006211, AP000330, AD000092, AL049766, AC007051, AC007100, AC006241, AF157623, ZF0924, AC007919, AC005102, Z86090, AC003112, AL121658, AL031719, AC007682, AC005771, AC006449, AC005940, AL133241, AC005503, AC003372, AC000003, AF161343, AC004992, AC007066, AL049873, AC005696, AC006965, Z84572, AL031650, AL031281, AC007193, AC005632, AL001169, AL022318, AC007842, AF000347, U75931, AC005261, U91327, AC007130, AC004987, AB022785, AL121852, AL023575, AL121694, AC007032, AC000052, AL031846, L47334, AC004217, AL031289, AL022476, AC002457, AF043945, Z85987, AP006936, AC005323, AC005837, AC007371, AC006210, AC000081, AL031283, AF000466, AL031670, Z82244, AL121603, AL021825, AC002422, AC004865, AP001068, AC006283, AC007671, AC003959, AC004876, AL022332, AC002422, AC004865, AP001068, AC008015, AL023799, AP000044, AP000112, AC002536, AL009031, AC002226, AP000473, AC004019, and AC0053768
HJNGN78	7775	860212	1 - 475	AL121653, AC004875, AD000091, AC005969, AC010170, AC004792, AC005412, and AC002564

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HNGND75	7777	974968	1 - 672	15 - 686	AC007786.
HNGND01	7778	915294	1 - 762	15 - 776	<p>           A002226, A127628, A127628, A130001, A1301039, A1141043, A1035865, A1270721, A1005796, A5534994, A1478710, A1404247, A1683640, A1935858, A1264511, A1121520, A1668748, A4557266, A1077802, A1955181, A1628202, A1086050, A1090542, A1166084, A198269, A1983208, A1377124, A1683889, A541435, A1081338, A1725813, A1070590, A1179522, A1932109, A1020840, A1081079, A1439451, A1068961, A1033877, A109480, A1134398, A1189306, A10883358, A1601021, A10903036, A1872331, A1920839, A1635641, A1214106, A1786782, A1551354, A1610664, A151942, A1211133, A1126908, A1535619, A1081495, A1335620, A1884357, A115738, A1297995, A1911637, A174028, A120893, A1887390, A173516, A1890394, A172695, A1680273, A1620718, A1578586, A1276552, A1190252, A1321166, A1476083, A1035750, A1035374, A17162495, A1469122, A1081889, A1079436, A1774108, A1342284, A1473922, A1973240, A1039051, A1084585, A1826973, A1826611, A1702028, A107770, A1098477, A1049540, A1180213, A1690720, D57533, A1001812, A173499, A1032492, A1047379, A1398664, A1074393, A1069375, A1706382, A1263477, A17243728, A1168559, A1753147, A1035310, A1288970, A1052705, A154869, A17264770, A177810, A1493416, A17268388, A1051099, A1598495, A1514907, A1287981, A166430, A1747253, A19364206, A1933724, A1493365, A1219361, A1360733, A1020272, A1667604, A1609237, A1824623, A1022871, A105044, A1002671, A10807153, A1928872, A153483, A1174366, A1730111, A1187825, A1041829, A1853124, A17173457, A1501361, A17130490, A1273536, A10898117, A1859433, A1818678, A1055827, A173494, A10144, A17132076, A1127320, A1979199, A1622833, A1583649, A1754770, A1809076, A1753765, A1096355, A1703919, A1753332, A1299238, A1602670, A1579625, A17471, A1022545, A1492509, A1057100, A1583931, A1047743, A1533746, A1083367, A1778087, A1190949, A17262610, A163572, A190389, A17339759, A1041973, A1678856, A1140137, A1146987, A1811361, A1927773, A190831, A1890665, A1232549, A1788865, A17273394, A1302621, A1700694, A1510725, A1723028, A1243228, A14973304, A1273008, A1423914, A1264872, A1251821, A1039947, A1866551, A1250692, A180040, A1028651, A1738286, A1702397, A1024882, A1783520, A18875881, A1263698, A1598774, A1338061, A1738061, A104150, A1470708, A1628500, A1115683, A1929829, A1070897, A1069880, A175038, A174672, A1919662, A1084814, A1367443, A173373, A134177, A1446560, A1092997, A156426, A1910384, A17385410, A134478, A18673, A1084513, A1630578, A1854828, A1797913, A18812131, A176010, A1561055, A1085001, A1049610, A14812, A1025049, A1700616, A1070664, A1713847, A1137697, A1611546, A100615, A1051470, A1051511, A152817, A162932, A108211, A174682, A1082060, A1232343, A1600929, A1580303, A1662255, A1731060, A1828583, A1206628,         </p>



HNGNA49	7779	974907	1 - 606	15 - 620	AA653675, Z21558, AA904436, AA773870, AL583553, and AL610630. AW378532, AA837655, AW360855, AA704393, AA576336, AL180682, F05324, AA527209, W03286, AA668022, AL46775, AL734144, AL254913, AA837035, AW084745, AW084739, AL800168, AA569183, D34614, AL031055, AC004881, AR060138, AF129108, AL022336, AC004251, AP000502, AC004408, AF053356, AC007899, AC005409, AL008718, AL034548, AP001053, AL033397, AC007193, AC005015, AL031053, L09706, AF019413, AC003665, ALJ29042, AC006468, AC004084, AC004019, AP001069, AC006252, AC004686, Z94056, AL031133, AC006130, AL021918, Z95114, AL022146, AP000348, AP000347, AC005280, AC004962, AC000052, AC005725, AL133321, AC002049, AP00170, AP000055, AP001123, AL035067, AC002472, AL024507, AL031680, AL135744, AL049540, AC004975, AC002301, AC002395, AC005900, AL049869, AL022318, AL031595, AL035695, AL031311, AC009247, AC007151, AC002543, L35667, AF1315187, U73024, AC005612, AL031848, AL022238, AC000070, AC004776, U85195, AF000658, AP000210, AP000132, AL035587, AL034554, AC004072, AL011930, and AP000466.
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HNGMY91	7780	974056	1 - 735	15 - 749	W45215, AL124798, AA565919, AC006449, AC005695, U47924, AC006026, AC009516, AP000556, AF030453, AL049780, AP000552, AC002425, AC005088, AC005089, AC002470, AC007707, AC005086, AC005071, AL133445, AC003684, AC005274, Z93023, AP000688, AC016830, AL096791, AC007461, AC016027, AL050332, AC005049, AC005225, AC004859, AC005081, AC005015, D87675, AC004815, Z83844, AC004854, AC007216, AF109907, AL049776, U91323, AC004475, AC007666, AC004531, AC004983, AL031587, AC007421, AL009179, AP000350, AL049872, AC002472, AC002477, AL022326, U95742, AC006312, AL049539, AP000502, AC004491, AC007263, Z95115, AC007664, AC004797, Z98884, AF134726, AC005837, AL022336, AC007358, AC004477, U80017, AC004967, AC002375, AC006011, U83283, AC005057, AC007686, AL009181, AP000248, AC005971, AC002544, AC005332, AC005881, AL022320, AP000045, AC007371, AL031282, AC006606, AC007226, AC002316, AP000049, AC006014, AC005067, AL096712, AF001549, AC006571, AL035681, AP000557, AC005037, AP000692, Z99716, AL121658, Z84480, AC004584, AC003109, AC004858, AP000311, AL096701, AP000689, AB023049, AC003982, AD000092, AC006511, AC004106, U62293, AC002546, AC004520, Z93930, AC005237, AL031662, AL078638, Z84469, AC005839, AL035460, AC007637, AC007308, U95739, AC005237, AL031595, AC006285, AC005261, AC007774, AC005899, AC004821, AB003151, AL021578, AL034549, AC003108, AC006459, AC005599, AL031311, AC006455, AL121652, AL022316, AC005823, AC005535, AC005562, AL109627, AC005884, AP000212, AP000134, AL035450, Z83840, AP000252, AC003053, AC006251, U91326, AP000300, AC004605, Z98304, AF11168, AC005778, AP001053, AC005488, AC005841, Z95114, AC007283, AL010770, AC004878, AL022322, AC002350, AL133448, AC004148, AL121578, AC002550, AC005519, AF196779, AC005578, AL049869,

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HNGMT40	7782	930430	1 - 601	15 - 615
HNGMT41	7783	966099	1 - 456	15 - 470
HNGMT12	7784	934389	1 - 629	15 - 643
HNGMP02	7785	935660	1 - 1026	15 - 1040
HNGME04	7786	927020	1 - 612	15 - 626
HNGMD92	7787	790887	1 - 575	15 - 589
HNGMD48	7788	974358	1 - 563	15 - 577
HNGMC01	7789	915310	1 - 1007	15 - 1021
HNGLY12	7790	968919	1 - 479	15 - 493
HNGLY08	7791	948825	1 - 834	15 - 848
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HNGLS90	7792	787446	1 - 604	15 - 618	W93091, A1W207524, R01213, A1016019, A1242115, and A1W136066.
HNGLS54	7793	972812	1 - 641	15 - 655	
HNGLO21	7794	974067	1 - 773	15 - 787	
HNGLL07	7795	952236	1 - 597	15 - 611	
HNGLK36	7796	974584	1 - 650	15 - 664	
HNGKY10	7797	963459	1 - 150	15 - 164	
HNGKS34	7798	974368	1 - 426	15 - 440	
HNGKQ80	7799	860306	1 - 703	15 - 717	

HNGK032	7800	860307	1 - 807	15 - 821	
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HNGJQ36	7813	796414	1 - 382	15 - 396	294056
HNGJQ36	7814	708121	1 - 299	15 - 313	AL037910, AL053445, AW082117, AA87149, AA603323, AA728978, AL347810, AA484143, AA552529, AL284640, AL673731, AL282661, AW238016, AA714467, AL181770, AL753267, AA524832, AL036283, AW275971, AC004231, AL008582, AF129756, AC004821, AC005375, AL096701, AL021391, AL049872, Z85987, AL022326, AC005519, AC002543, AC005632, AL096701, AC005899, AB023049, AC006211, AC005081, AC001134, AC005668, AC005768, AC006449, Z82180, AC004859, AC004814, AC005591, AC002470, AC004448, Z97054, AL034421, AL049599, AL031281, AC006285, AC005971, AC009516, AC003029, AC004257, AL031257, AL020963, AL022316, AL009179, AC006312, AC002344, AC005225, AC005730, AC004799, AC005726, L78810, AL078581, AL121652, Z83844, AC005041, AC004765, AC005212, AC004812, AL031666, AC020663, AC002350, U91326, Z94802, AC006011, AC000025, AC005154, AC004890, AL031680, AC004491, AD000092, AC009247, Z83840, AF196779, AL035659, Z99716, AC005678, AC004887, AC006071, AP000111, AP000043, AL121655, AC005164, AC002126, AF190465, AL049576, AL117330, AF045533, AC003007, AC005781, AL031311, AC000026, AC005660, AC006120, L78833, AC002418, AF051934, AC005874, AF134471, AC005702, L44140, AC008012, AF111169, AC006468, AL049869, AL109865, AC005291, AC006130, AC003101, AC004000, AL023882, AC005529, AP000512, D87675, AC012384, AC006480, D83989, AC004638, AL021154, AL121603, AL078639, AC004386, AL133448, AP000358, AC002300, AC004098, AC005255, AC007384, AC002059, AC005695, Z95114, AC005288, AC002365, AC004263, AC007066, AL035072, AL117354, AC007731, AL229042, AC005261, AC006239, AF196969, AF006263, Z84572, AC005500, AL008715, AL133163, AC002347, AL049776, AC004472, AF126531, AC005914, AL049780, AC004526, Z98742, Z84480, AL008721, AL133245, AC005004, AC005484, AC008372, AC002091, AC002115, AC007216, AC007510, AF196970, AF053356, AC002316, AC002565, AC004477, AC006006, AC004955, AL133399, AP000065, U91321, AC003042, AL135744, AC008079, AC006241, AC007207, AC002563, AC007773, U95740, AL117344, AL109653, AC004972, AC005531, AC004687, AB023051, AC002395, AC007193, U91323, AL39972, AC012627, AC009248, AP000557, Z68162, Z85986, AL035409, AL023555, AC008529, AL008730, AC004895, AC003688, AC003043, AC004685, Z84476, U62317, AC005827, AC004774, AL008710, AC007919, AP000356, AC005772, AL033525, AC005799, AC007298, AC002310, AP000504, AL021395, AP000090, and AC007546.
HNGJQ08	7815	959511	1 - 110	15 - 124	R83852, AC005326, and AC004924.
HNGJL47	7816	720363	1 - 641	15 - 655	AL1346735, AL304808, AA916741, AL1273323, AL367917, AA190879, AA488481, AL1273765, AA190847, AA488351, AL268909, AL263971, A W016733, and R45594.
HNGJK64	7817	746615	1 - 271	15 - 285	AC009247.
HNGJK63	7818	839947	1 - 373	15 - 387	AA861844, H68343, AL207424, AC002300, Z47066, AC005755, AC004913, AC004081, Z98051, AC002470, AC004953, AL133246, AC005730, AC005332, Z82196, AC005244, AL078639,

			AC006213, AI239325, AI031846, AC005015, AC004646, AI035423, Y17457, AI133500, AC002044, AC005666, AI132857, AF121781, AC002390, AC007075, AC005214, AC007676, AC010582, AI031657, AC005191, AI049843, AP000948, AI049829, Z98946, L48038, AC000026, AC002059, AI0231803, AC004783, AP001052, AC005067, AI049757, AC004263, AC005538, AC006126, Z97353, AC004099, U91323, AC007384, AC005684, and AI031289.
HNGJK40	7819	711219	15 - 382
HNGJH40	7820	711211	15 - 385
HNGJH40	7821	615285	15 - 339
			AA738934, AI034443, AI053672, AI754955, F36273, AI284640, AW238778, AI281881, H40410, AI801591, AI672135, AI133164, AI587583, AI587565, AI499503, AI355206, AI048142, AI001583, AA502155, AI041706, AI192631, AW270270, AA873573, AI919029, AA872067, Z78385, W79504, AW008317, AW073470, AI148277, AI144330, AI860020, AA573131, AI434311, AF029308, AI035494, AI031311, Z83848, AP002429, AI031427, Z86061, AC002430, AC005529, AC007384, Z69917, Z84480, AP005500, AC003109, AC005046, U91326, AC003007, AC005412, AI049872, AC004491, AC002470, AC005632, AI109623, AC005244, AC009069, AC005324, AC004895, AC003864, AC002093, AF124523, AC002301, AC005037, AI023553, AC005519, AC007488, AP00962, AC003015, AF091512, AI003147, AC006211, AI022163, AC004257, AC006539, AI031728, AC005921, AC005699, AC005387, AC005019, AI246003, AC006511, AC002045, AI022332, AI031770, AC005250, AI121658, AC009516, AI133448, AC006312, AI031650, AC004765, AC007878, AC005740, AC001231, AC007227, AC005516, AC005393, AC002115, AI121825, AC003101, AC004913, AC004067, AF134726, AI122020, AC006050, AC004638, AC007564, AC006017, AF200465, AC002312, AC003085, AC008372, AC002063, AC006480, AC004381, AC004825, AC007363, AC005527, AC004531, Z83840, AC005231, AP000553, AC002544, AC008064, AP000090, AC000025, Z54246, Z85987, AC002549, AC008101, AC004949, Z84484, AC004453, AI121748, AC004980, AI011930, AC007731, AI034418, AC005500, AI121603, AP000114, AI049780, AB001523, AI033392, AC002425, AI139054, AC007310, AC004901, U93742, AC004019, AD000092, AI109967, AC009399, AI034343, AF023268, AC005988, D87675, AC005696, AC007130, AC002094, AC000134, AC005913, AC003982, AF129756, AI024507, AC002126, AC006079, AC006006, AC002395, AC005839, AC008079, AC005409, AI034402, AC003009, AC005406, AI031673, AC005619, AC010205, Z98200, AC006057, AI021808, AP000692, AI022313, AC004152, AC007216, AC005211, AF123462, U47924, AC007298, AC003003, AF067844, AI132994, AF146367, AF196971, AC004534, AI035458, AP000402, AI078477, AC005829, AI021546, U91321, AP000557, AC005358, AI031281, AC006479, AC004751, AC007225, AI020995, AC006241, AC006128, AC009288, AI049636, AC004963, Z93930, AI022332, AF165926, AI022476, AI021937, AC002394, AI049776, U63721, AI022328, AC004890, AI035684, AC005799, Z95889, AC007151, AI024498, AC000353, AI133485, AC007193, AC005768, AC004997, AI031319, AI035869, AF049895, AI023575, AC005065, AC010072, AC005520.



HNGJG75	7822	942946	1 - 1020	15 - 1034	AC005385, AC008115, AC008055, AC005360, AC007537, and AC006013.
	7823	422897	1 - 379	15 - 393	
HNGJG35	7822	942946	1 - 1020	15 - 1034	AC005385, AC008115, AC008055, AC005360, AC007537, and AC006013.
	7823	422897	1 - 379	15 - 393	
HNGJE38	7824	495689	1 - 616	15 - 630	AA789303, AI1810153, and AI914400.
	7825	600366	1 - 1058	15 - 1072	
HNGJE23	7824	495689	1 - 616	15 - 630	AA789303, AI1810153, and AI914400.
	7825	600366	1 - 1058	15 - 1072	
HNGJG75	7822	942946	1 - 1020	15 - 1034	AC005385, AC008115, AC008055, AC005360, AC007537, and AC006013.
	7823	422897	1 - 379	15 - 393	
HNGJG35	7822	942946	1 - 1020	15 - 1034	AC005385, AC008115, AC008055, AC005360, AC007537, and AC006013.
	7823	422897	1 - 379	15 - 393	
HNGJE38	7824	495689	1 - 616	15 - 630	AA789303, AI1810153, and AI914400.
	7825	600366	1 - 1058	15 - 1072	
HNGJE23	7824	495689	1 - 616	15 - 630	AA789303, AI1810153, and AI914400.
	7825	600366	1 - 1058	15 - 1072	

			ZS5987, AC009516, U18400, AP009948, AC004690, AC005703, AC000235, AL033523, AC004895, AL035405, AC000039, AC006137, AF088219, AL031577, AF080052, AL031681, AC005048, U70007, AF015149, AJ246003, ZB2198, AC005548, AL050341, U95742, AH053356, AC005825, AC007225, Z99716, AC005971, AC0094750, AL023284, S75201, AL050097, AC004854, AF077058, AL096701, AC004675, SA3650, AC002350, AC006449, AL022163, AC007684, ZB3845, U67831, AL031848, S70707, AC000090, AF202321, AL008582, AF055033, AF091512, U67227, AC005086, AC005288, AC006312, AP000244, AC006195, Z97205, AC009533, AC016026, Z94801, AL034429, AC005944, AF165926, AC007666, U63630, AC005562, AL080242, U67233, AL121757, AC009044, AC013248, AL035423, AC005484, AL008716, AC005911, AC005191, AL049869, D42087, AF038438, AL035079, AP000359, AL133245, AF141976, U67827, AC002430, AC007421, AL109738, AF015151, AC004030, AC002343, AP000514, AL049795, AC004858, AL133371, AC005920, Z86090, AC005332, AC005249, ZB1308, AL022097, AP000348, AF001548, AF109907, AC006344, AC004890, AF227510, AL021937, AL021453, AL049830, AC006004, AC007384, U14694, Z69719, AL121934, AL132777, AC005081, U67231, AC005412, AC004263, AC004813, AC002377, AC012627, AC004502, AC005231, D84394, L49046, Z69601, AL035587, AL035494, AL035361, AB000658, AC005852, AL132712, AC005512, AL022320, ZB3844, S77605, AP000495, AC007546, AC002564, AC006241, AC003101, AC004547, AC004053, AC006120, AC004985, AC006368, AC005233, X53550, AC004821, AC002070, AC005069, AC005096, AC006965, AL121658, U14695, AF111168, AL008726, AC005618, AC005089, and AF015158, AL135677, AL109984, AC004063, AL022328, and AC006155.
	15 - 548	15 - 534	W57586, AW194627, W93807, A0709554, AW243050, AA279001, AL281191, AL143216, A983569, AW294001, AL392855, AA557282, N49211, AF165833, AL335326, AA292772, AW705078, AL338729, AZ141107, AA476900, AA251779, AI963754, A0087153, AI063642, AI857402, AI949689, AT763030, AI884606, AA704804, AA731007, AI376580, AA921827, AC032953, AI823966, AI915274, AA767672, AI522479, AI968828, AI797706, Z74023, AF131220, and AF172244.
	15 - 548	15 - 534	N63664, N59771, N91071, AL084981, N78232, R00854, and R01507.
	15 - 421	15 - 407	AC004908, AL031259, and AC004842.
	15 - 469	1 - 455	R40022, and T99558.
	15 - 374	1 - 360	AL313083, AW081303, AI796493, AAI28511, AW410354, AL047349, AAG30245, AA486568, AAI552202, A020088, AAM04831, AW191886, AI915293, AW022934, AW021161, AL049872, ZB2178, AC003098, AC006538, AC004881, AC004491, AF207550, AL022302, AC005756, AC002740, AC007193, AC006160, AC005368, AC004757, AC005619, AL021707, ZB4480, AC002554, U62293, AL0311728, AL1049569, AC007686, AC002398, AF035356, AC005821,
HNGJB49	7830	723004	1 - 699
HNGJA75	7831	888461	1 - 407
HNGIX71	7832	760398	1 - 455
HNGIWA5	7833	717698	1 - 360

					AL035405, AL050341, AC004687, AL022313, AL021391, AC004985, AL096775, Z83826, AL031289, AC003093, AC004686, AC006449, AC007216, AC005088, AC003010, AC0008372, AC004876, AC005081, U91326, AP000240, D87675, AL035413, AC007792, AL096701, AF196779, AL031311, AC005261, AC002351, AC005520, AL031666, U91323, AC003101, AC007225, Z83822, AC004966, AC006211, AP000555, AC005015, AC006468, AL049829, AC004186, Z99716, AF030453, AF047825, AL034379, AC007845, AF000658, AP000517, AC005086, AP000143, Z93023, AC004263, AL049843, AL049636, AC005747, AC005220, AP000194, AL023553, AP000090, AL078381, AC004526, AC005412, Z85987, AB023054, U95742, Z84469, AL009181, AC007690, AC002073, AP000690, AC005355, Z95114, AC005544, AC016026, AC003982, AC005774, AC005288, AC005067, AC006441, U85195, AC007308, AC003364, AC004854, AC004799, AL008718, AC003043, AC005082, AC007940, AC005529, AC002316, AC005971, AF217403, AC005666, AL049758, AL079340, AF067844, AC005837, AC002094, AP000692, Z83851, AC002369, AC006115, AC005280, AL022316, AL035682, AL096678, AP000557, AP001053, AC003665, AL049795, AL109984, AC005625, AL034420, AC004983, AC006597, AC004025, AC004851, AC006960, AC012627, AL050318, AL049539, AL031431, Z82184, AL078638, AC005089, Z95116, AC005562, AC005071, AC002132, AC006079, AC006480, AC005514, AC002350, AC006509, AC004230, AC004858, AC005291, AC005225, AC004659, AL049757, AL121653, AC007151, AC004525, AC002563, AC004658, AC007566, AC005005, AL022336, AC005358, AF111108, AL109827, AC008116, AC000052, and AC007227.
HNGIS92	7834	792748	15 - 542		RI9806, and AC004169.
HNGIS70	7835	757216	15 - 696		HP6207, and AL572367.
HNGIS02	7836	920221	15 - 543		AL565849, and AL175659.
HNGIR10	7837	964715	15 - 501		AV005230, AL598235, A191890, AW004702, A1655877, AV264973, AA640772, AW088202, NS4704, N71724, AA340960, A1133986, AF177861, AA344959, AL138421, AP003147, AC000663, AC007228, AC004890, AP091512, AC005261, AC004821, AF134726, AL050097, AC006478, AP001068, AP001067, A1011930, AL035658, AB011129, AC007488, AL096867, AL000092, AC006059, AC003006, AC006548, AC006623, AC007204, AC007182, AC005387, AC004382, AF001549, AC007011, AF106656, U67213, AL022238, AF030453, AC005519, AL031662, AC006285, AC005088, AC007845, AC002404, AC006277, AC016025, AC005839, AC005666, AP000474, AC005696, L44140, Z99758, AF053356, AC005772, AC006543, AL021918, A1012197, AC005829, AL109621, Z86090, AC007387, AC006552, AL031685, AC005412, Z54334, AL132992, AC006544, AC006480, AC004783, AL133238, AP000115, AC002306, AC006323, AC006222, AC007666, AC005913, AC000052, AF207550, AF0011707, AC006539, AC004019, AC002991, AC004816, AC006116, AL109798, AP000355, AC006358, AC002492, AC008372, Z85997, AC005215, AP000503, AC005694, AL031286, and AC003003.
HNGIQ78	7838	772866	15 - 419		

HNGIO71	7839	495771	1 - 494	15 - 508	
HNGIP47	7840	720374	1 - 437	15 - 451	
HNGIP27	7841	860515	1 - 590	15 - 604	AA458777, AC007387, and AC006544.
HNGIO64	7842	487439	1 - 511	15 - 525	AC007011.
HNGIO52	7843	727196	1 - 621	15 - 635	NA09711, and AA644354.
HNGIL94	7844	793171	1 - 383	15 - 397	AI826442, R43468, AI910265, AA768079, H48670, AI078474, AI023876, AC006211, AC005215, AC002418, AC004386, U47924, AI050307, AI022326, Z69709, AB023048, AC004650, AC007537, AC001255, AC005940, AP000150, AI034379, AC006273, AC004526, Z95115, AC005280, AP000009, AC004765, I05367, AC005480, AI031589, AC007346, AI133245, AI121655, U91323, AI049843, AC006064, AC007540, Z84469, AC002351, AC005694, AC007030, Z82178, Z93023, AI009179, AI035072, AI008582, AC007225, AC005399, AI021155, AI031680, AC004673, AC004812, AI109623, AI031587, AC007066, AI022318, AI109865, AC004019, AC005914, AI035398, AC004897, AC005529, AI034420, AC007421, AC002126, AC006312, AC006365, AI049869, AC004859, U62317, AI122020, AI049759, and AI096703.
HNGIL84	7845	781970	1 - 959	15 - 973	W81663, AI575213, W81222, and AF086461.
HNGIL82	7846	812699	1 - 355	15 - 369	AI755214, AI754367, AI754170, AI48597, AI754105, AI069412, AI069227, AA503298, AI634187, AA833875, AA833896, AI701930, AI701942, AI613389, AI133083, AA768340, AI075132, AA192293, AI0249688, AI037927, AI662552, AA600202, AI669599, AI046474, AI583142, AI590458, AI457313, AI0419389, T47138, AA714011, AA706495, AI004591, AI0304580, AI190484, AI267356, AI251429, AA644090, AI569982, AI079734, AI561016, AI036070, AI038304, AI254779, AI089016, AI653636, AI536834, AA654781, AA568314, AI192599, AI569100, AI053786, AI570943, AI590499, AA297776, AI921744, AI105463, AI075432, AI023672, AI022154, AA559241, AI267450, AA779783, AA524616, AA507282, AI635609, AI566408, AI371208, AA299589, AI565126, AI610737, AA405726, AA262752, AI809546, AI732720, AA482105, AA832145, AI791659, AI078409, AI105729, AI570805, AA218720, AA864426, AA526625, AI431513, AI040054, AI745335, AC004653, AC005535, AA579152, AA657374, AA487226, AI0304216, AC005839, AF111168, AC007792, AC004517, AP000048, Z98036, AC007292, AC004216, AC005839, AF111168, AC007792, AC004517, AC004472, AC005907, AI031447, AI031535, AI122020, AC004983, AC004034, AI031433, AP000952, AC006111, AC002350, AC007066, AC004865, AC005067, AC005529, AC003963, AI033527, AC005736, AC005218, AC004884, AI031311, AI000353, U85195, AI133448, AP000212, AP000134, AI031685, L44140, AC002480, AI022238, AP000030, AC004009, AC006130, Z93096, AC016025, AC004838, AI031432, AI000658, AC005540, AI034072, AC004686, AC004228, AI031284, AC004650, Z97542, AI022323, AI109628, AI034420, AC005378, U07563, Z97183, AC005696, Z93023, AI133245, AI049776, AC005529, AC005081, Z98950, AC006285, AC005632, AF196069, AC005971, AF207550, AC005606, AC002347,

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HNGIL51	7847	725003	1 - 434	15 - 448
HNGIL22	7848	860525	1 - 383	15 - 397
HNGIL51	7849	868068	1 - 611	15 - 625
HNGHY44	7850	973977	1 - 437	15 - 451

HNGH004	7851	793271	1 - 205	15 - 219	AL002237, 293016, AC004841, U18671, AC006127, AC004525, AC002303, AC004686, Z97181, AC005602, AC000697, Z85996, AC007899, AC002984, AD001527, M63543, X55448, M63544, AC005049, AD000092, AC003086, Z84476, AC007799, AL096797, AC004594, AC005881, AC007738, AL0049781, Z82246, Z69920, AC005944, AL034429, AL049765, AL049869, U62317, AC011116, AC004622, Z95115, AC011604, AC006960, AF015262, AL1229043, AC004605, AF015165, AC004933, U75285, Z48051, AC007059, AC004462, AC006275, AC005625, AC006162, AL034382, AP000455, AC008103, AP000008, AC003213, L77570, AP000704, AC001231, AC006316, AL132716, AC006948, AL080243, AL121576, L44140, AC000003, AP000555, AJ250235, AP000144, AL109997, AC002331, AC002465, AC006946, AC005952, AL080313, AL135530, AL023653, AC007390, AC002316, AP000549, AC007766, AL034377, AC009044, AC009263, AF109907, AL109907, AL118516, AC004161, AC007096, AC005018, AF124523, AC002551, AC007495, AC018633, AL135746, AL117693, AL050808, AC001550, AC004491, AC000026, AL022325, Z81314, AF035397, AF003627, and AC004836.
HNGH004	7851	793271	1 - 205	15 - 219	AC004967.
HNGHM61	7852	576221	1 - 483	15 - 497	AA078128, AL049576, AF053356, AC004895, AC005520, AC005071, AC004686, AC004595, AC004813, AC007688, AC002312, AP000555, AL133245, AC005015, AL109963, AL035887, AL031846, AF047825, AC004883, AL022316, AC007055, AC005484, AC005225, AC005081, AL031589, AC004854, AF205588, AL035422, AL049780, AC010205, AL121603, AC007938, and Z93023.
HNGH146	7853	806541	1 - 517	15 - 531	AA629328.
					AL003408.
HNGH101	7854	916757	1 - 517	15 - 531	AC002554.
HNGHG39	7855	860554	1 - 388	15 - 402	T91220, AA258779, AC0009731, and AC004530.
HNGHDX8	7856	576315	1 - 493	15 - 507	R73389, R73388, and AC005015.
HNGG068	7857	920377	1 - 439	15 - 453	
HNGG078	7858	959649	1 - 374	15 - 388	
HNGG091	7859	576251	1 - 457	15 - 471	
HNGGP25	7860	578450	1 - 251	15 - 265	
HNGGL74	7861	765644	1 - 815	15 - 829	AW00575, AL035766, AL358229, AL037683, AL284640, AW085794, AW023672, AL350211, AA719865, AW193265, AL042856, AL810318, AW19262, AW088846, AL063720, AL334443, AL079645, A5573020, AA609642, AL70171, A1560986, AA482711, AA657835, AW088202, AP954260, AL044940, AA515503, T29180, AL138455, AL368745, AW249224, AL865364, AW020141, AL431303, AA259245, AL079910, AA244357, AL688846, AL110770, AC003611, AW080134, AL133723, F29989, AL046409, AL659988, AL327868, T40617, AW339687, AL821918, F18974, AA344959, AL635272, AW019964, AL338501, AL223616, AA843450, AW264973, AA669251, AA834792, AA559290, F36273, AL434706, AA652057, AA482806, H02631, AW069481, AF17861, AA7184, AA665330, AW088616, AL821881, T91187, AL0631507, F228576, AL611280, AW276435, AA449088, AA350859, AA347927, AA148489, and AA00573.

HNGBF86	7862	860568	1 - 414	15 - 428	AA604897, AA359958, AB45675, AW406447, AC002316, AC005699, AC018767, AC005690, AC005194, AC003084, AC007402, AC005520, AL031311, AC009300, AF064864, AF165176, AL031774, AC002384, I51997, AC008134, AC006013, AC008067, AL078603, AC004523, AC002368, AC008055, AC006143, Z95114, AF055066, AC005066, AC002523, AC004948, AP000477, AC007050, AL022723, AC002492, AC018769, AC005157, AL022726, AJ29041, AC005701, X54175, AP000095, AF165175, AL117238, AP000239, AC005177, U57009, X54181, AL022396, AC008072, AL121718, X55976, U18394, AL117693, U18391, AP000521, AC003109, AC005288, AL049562, AJ133269, AL049633, AC005592, AC007240, Z83841, Z82194, AR036572, U91328, AF130343, AC004866, U67221, Z98950, AC000119, AC004966, AC003088, AF178036, AC006019, U18399, AL032821, AL132985, U18387, D83989, X54178, X54180, AL049781, U18395, AL031230, AL008629, AC006037, AC007110, AB020876, AC002066, AC004448, AC007687, AL121652, AL110505, AP000159, AL021917, AC000403, U57007, AC007189, AJ239322, U18393, AL031073, AC006573, X55925, AL135746, AC005968, U18398, AL035671, X032772, AC005069, U18392, AC008119, AC005661, AF043945, X54176, AC006961, AC006322, U57006, AL022574, AC004944, X55924, U57005, AL022162, AL078624, AC005704, AC004783, AF015720, AC007652, X55931, AC006959, AL031054, X55927, AC007380, AC004020, U67832, AL078613, AC005939, AC004785, AL096791, AL096867, AP001257, AL031686, Z93928, A39972, AL031656, AC001164, AF003626, AP000245, AP000035, AC006512, AF019114, AC004883, AL035697, AC016831, U57008, AC006525, N96868, U91326, Z22650, U18390, AL049691, AL133241, Z97054, AL035552, AL050308, AC004964, AC002984, AC005548, AL035604, AC002422, X55932, AC005279, AL033525, AC009923, AF179633, AL136018, AF027390, AC005772, AL035667, AL117356, AC010072, AL049576, AF126403, AC007666, AJ069997, AP000563, AL133245, AC005479, AL035448, AF227510, AL096703, AF038458, AL109967, AC006032, AP001051, AP000065, X54179, AL079340, AL078477, AC005994, Z94044, AC004383, AL008634, AC004019, U18396, AP000402, AC004170, AP000133, AP000211, U03115, X55928, Z84489, AL133382, AF205588, AC006530, and AL109837.
HNGBF87	7863	860569	1 - 415	15 - 429	AL109837.
HNGBF88	7864	860570	1 - 416	15 - 430	AL109837.
HNGBF89	7865	860571	1 - 417	15 - 431	AL109837.

HNFGX75	7866	608695	1 - 1016	15 - 1030	<p>D58253, AW178762, D51250, AA514188, D80133, Z21582, A1557751, C05695, AW177501, A190186, AW177511, AW360811, D80268, AW352117, A1903836, C14407, AW176467, AW375405, D80258, D80132, AW377671, AW378540, C14071, AA285331, AW366296, D80247, AW360844, AW360817, AW375406, D80439, AW378534, AW179332, AW377672, AW179023, AW177905, D59373, D80302, AW352171, AW360834, AW377676, AW178906, AW352170, AW177731, AW178907, AW179019, D58246, AW179024, D51213, AW177505, AW360841, AW179020, AW178909, AW177456, C06015, AW179329, A1557774, AW178980, AW177733, AW378528, AW178908, D51097, AW178754, AW179018, AW352174, D80157, D59627, D80014, AW179004, AW179012, AW178914, AW378525, D51103, AW367967, D51793, C14227, AW177722, AW177728, D81111, AW179220, AW179009, AW178774, AW178911, AW378533, C14975, AW178983, AW352120, T03116, D58101, D59653, AW178781, D59503, T48593, T02974, H67866, D45260, AW177723, AA809122, AW177508, A1535850, H67854, AW378533, AW367950, D80168, C03092, AW378539, D51221, AW177497, A1525923, AW178986, D45273, D80228, A1525917, C14973, D80949, AW177734, D59317, D50981, D59474, A1535686, A1525920, C14344, A1525215, AA514184, A1525235, C14957, D60010, D59551, D60214, A1525227, C14046, H67858, A1525912, A1535961, T03048, A1525242, AW378542, A1525925, A1525222, Z33452, C16955, C05763, D51079, D51053, Z30160, AW360855, A19018138, A62298, A62300, A84916, A1132110, A25909, X67155, A67220, Y17188, D26022, D89785, A78862, D34614, AR008278, AF058696, D88547, AB028859, X26266, AR025207, Y12724, A62595, AR060385, A94995, AB012117, AB002449, X68127, AR008443, A85396, AR066482, A44171, I50126, I50132, I50133, A85477, I19525, A86792, U87250, X93549, AR066488, AR016514, AR060138, A45456, A26615, AR052274, Y09669, AR0938669, A43192, AR066490, A43190, AR066487, A30438, I18367, I14842, D88507, AR054175, D50010, Y17187, AR008277, AR008281, A63261, AR008408, AR062872, A70867, AFI35125, AR016691, AR016690, U46128, D13509, A64136, A68321, AR060133, I79511, A15023656, U87247, AB033111, AR064240, U79457, AFI23263, X93535, AR032065, and AR008382.</p> <p>A1061313, AW167154, A1246996, AA135761, A1119838, A1281818, H63092, AA484892, F24745, AA578690, A1270476, A1598003, AA634837, AA728011, AW238121, T05118, AA809546, AA441810, AFI19813, A1049776, AC004228, A1121658, Z60704, AC006205, A1031311, AC003025, AC006480, AC004014, U91318, AC002464, AC007537, AC006230, U82669, AC005372, AC006430, A1049780, A1049843, AC008101, AP003557, AC006230, U82669, A1122020, AC008115, AP000044, AP000112, AC002132, Y18000, AC006064, AC006449, M87889, AC005387, AC004408, AFI29756, AC006511, A1031670, AC002996, AL008726, AC004584, AC005529, A1021393, AFI196779, AC007421, AC004686, AL008627, A1021155, AC006538, D87675, Z82203, M59199, AC005829, A1135744, AF050154, AC006597, AC002072, AC002314, AC005682, AC008055, AC005005, A1035697, AC005363, AC008079, AP000134, AP000212, AC000003, AC005620, AC004743, A1049795, A1122023, D84394, AC006013,</p>
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HNGFU33	7867	702584	1 - 675	15 - 689	AC006547, AC005747, AC005874, AF134471, AL049832, AL078581, AL139054, AC004491, AC009501, AL031589, AC004144, AC005726, AL133448, U95900, AC005536, AL008718, AC004858, AC005225, AC003101, AC004386, AC005399, AC004551, AP000152, AJ246003, AF070718, Z95331, AC004534, AC007324, AL050318, AC003955, Z83826, AC004967, AC005480, AC005799, AL031281, AC003688, AC005694, AC005955, AC007263, AC004812, AL080243, AC005920, AP000553, AL022163, AC007919, AC005081, AC007227, AP000556, AL096701, AC005722, AL049569, AP000509, AL035086, AL035659, AC005899, AC000134, AL021397, AL022334, AC004849, AC007226, M29929, AB025285, AC000070, AC007774, AC005696, AF111168, AC007166, AL031587, AC004975, AC006137, AC004685, AC002287, AC004552, AL049636, Z83822, AL049653, AC004913, AC004635, AC005527, AC006241, AC008122, AL022318, AC007216, AC004472, AC003043, AC004125, AC000063, AL050307, AB001523, U89335, AL117694, AF109907, AL109627, AL022166, AL022313, U95739, AL049643, AC004854, and AC005608.
HNGFU33	7867	702584	1 - 675	15 - 689	N45312, AT761447, AL636286, N71104, AL636173, AL143859, W68421, W68519, AL561031, AW381539, AL589337, AX778620, AA771992, AA744429, AA921991, AW196737, AW381478, AW381460, AA889180, W05847, AL170531, and AL932774.
HNGFT02	7868	920480	1 - 307	15 - 321	AA716766.
HNGFR06	7869	933821	1 - 510	15 - 524	R61534, AL681105, AW082635, H00958, AL871530, AL986039, and AL1378964.
HNGFP92	7870	842276	1 - 609	15 - 623	
HNGFN70	7871	872950	1 - 331	15 - 345	AC005316, and AC005317.
HNGFM17	7872	664280	1 - 623	15 - 637	H66970.
HNGFK34	7873	703419	1 - 296	15 - 310	
HNGFI11	7874	967304	1 - 406	15 - 420	AA226156.
HNGFH90	7875	789066	1 - 493	15 - 507	AA081717.
HNGFHS8	7876	738240	1 - 515	15 - 529	H63640, T79700, AL657076, AB011135, AC005829, AC005670, AC005332, AC004675, AF088219, and AC007993.
HNGFH30	7877	823363	1 - 2788	15 - 2802	AL889426, AL433104, AL921744, AL130647, AL732911, W96277, AW0408643, AA654991, AL1679002, AW089625, AA534064, AA658844, AA650623, AA626632, AA595370, AL134940, AL583532, AA486896, AL040921, AW167330, N70044, AW406447, AA831913, AL73789, AL820992, T57096, AL709211, AL192631, AL110760, AA825954, AL832865, AL128899, AA584482, W272294, AA225406, AL890324, AA503298, AA916430, AL560241, AW069227, AL687343, AL635028, AA609826, AA078849, AW190484, AA456924, AA707758, AA608588, AL984168, AA424078, AA665449, AA020873, AL037927, AL371208, AA299589, AL565126, AL610737, AA405726, AL888468, AA773098, AL282253, AW410193, AL370170, AW084445, AW268329, AW023111, AL720582, AL670453, N72678, H53546, AA608612, AA630854, AL634187, AA809546, AA584489, AW083934, AP003777, AL889579, AA021561, AL1199816, AW068596, AL572680, AA803869, AA297776, AC004883, AF111169, AL021707, AC006057,

				AC005829, AC006450, AL049569, AC005031, AC012627, AL022163, AL022320, AP000692, AL109984, AC005755, AC006511, AC005837, AC005565, U80017, AL034429, AL035423, AC006539, AC007686, U81957, AC005839, AC006449, AC005011, AC005531, AC005914, U89337, AC005200, AC004797, AC005736, AC006211, AE000638, Z98742, AL022336, AL020997, AC003010, Z93017, AC006965, AL031311, AC004821, Y14768, U80459, AC006285, AL049795, AC004686, AC005730, AC005971, AF109907, AC005933, Z99716, AF001548, AL109628, AC002543, AL109758, AC005379, AC005057, U95739, AC004448, AC006121, AL021391, AL031120, AC003104, Z97054, AP000505, Z84487, AL133245, AC006480, AL031255, AL031602, AC004834, AP000513, AC005319, AL031846, D88268, AC007151, AL024498, AC003030, AC005484, AC009247, AC007687, AC007216, AB023049, AL022316, AL022329, AC009248, AB001523, AC006064, AL133448, AC006277, AJ003147, Z86090, AL139054, AC005004, AC006011, AC005003, Z95152, AL050341, AC002565, AC007685, Z98200, AC005179, AL049712, AC003982, AC006516, AL023575, L78810, Z95115, AL031848, AC004638, AP000098, AP000010, AP000151, AC005670, AC005839, AC005746, D84394, AC005527, AC004030, AP0005102, AL022476, AC005412, AL133163, AL133371, AL035071, AL031281, AL021808, AL031673, AL034420, AC004953, AP000212, AP000134, AC000026, AF107885, AC007226, AC006077, AC007314, AC005261, AC006966, AL021546, AC000353, AC006581, AL049839, AC008874, AFI34471, U91326, AC007011, AC005790, AC007546, AL096701, AC007981, AC008372, AC008072, AL024507, AC007298, AL049872, AC006530, AL049776, AL030318, AF053356, Z83844, AC008035, AP000135, AC007934, AC004149, AL109952, AC005209, AC002059, AL024474, AC005409, AC002476, AL031055, AL132712, AC006455, AC005089, AL031283, AP000694, AC004526, Z84480, U95742, AC003682, AFI96779, AC005529, AP000308, Z98884, Z95331, AD000671, AC004918, AC002115, AC004491, AL035455, AP000031, AP000030, AC006312, AL031295, AC004531, AC005740, Z98946, AL022323, AL096791, AL035086, Z98051, AC005399, AL034417, L48038, AF030876, U78027, AF111168, AC002310, AC005251, AC007387, AC007114, AC006538, AL031276, AC004752, AF020750, AL020995, AFI34726, AL031229, AC016025, AC004167, AC007684, AC004913, AC007065, AC007421, AL031230, AL022311, AC006251, AP001053, AC005041, AC004895, AJ246003, AC006059, AC005668, AP000334, AC005594, AL031577, AC003950, AC005696, AC005944, AC005231, Z83840, AL109627, AC004383, AL117354, AP000537, AC005244, AL121655, and AC000008.
HNGFG10	7878	968059	1 - 1028	AA025836, AA025837, AA723506, AA457243, and AA457244.
HNGF50	7879	941480	1 - 2217	AC005342.
HNGFE75	7880	486855	1 - 549	AL049594.
HNGFE58	7881	871493	1 - 620	AA148705.
HNGFA23	7882	927579	1 - 236	AA953959.
HNGFA18	7883	666626	1 - 383	AA029118, AA770385, and AA629144.

HNGEY55	7884	888324	1 - 363	15 - 377	T25322.
HNGEY38	7885	868073	1 - 538	15 - 552	AA593968, and AW138070.
HNGEX10	7886	860615	1 - 639	15 - 653	H22044, AA354647, AL042044, AL008724, AL033538, AB028966, and AL080174.
HNGEW38	7887	573234	1 - 799	15 - 813	R76032, and B30916.
HNGEH20	7888	669811	1 - 522	15 - 536	R68338, and R31248.
HNGET91	7889	789373	1 - 403	15 - 417	AA721530, AA376872, AA493731, AA620373, T97368, AA728925, AA719292, A V028089, AA167335, AA086435, AA173071, AL040154, N23840, F00979, AA040654, AA776194, AA330897, W86573, AA554257, AA728963, W81359, T89855, AA206062, AA070740, N23062, AA425744, AA167159, N0815, T72218, AA984222, H86041, AA640252, T53253, T61555, AA526099, AA608570, T47889, R92217, R89784, AL034429, AC005519, AF064865, AL049757, AL034369, Z95152, AC004475, AL135959, AC004031, AC005905, AC005089, AC006333, AL022241, AL132826, AL034376, L77036, AC000352, Y11107, AC004753, Z82176, AC005502, AC005685, AC003963, AC005074, Z82243, M89651, AL031602, AC004775, AC006599, AP000223, AL008637, AP000008, AP000086, AC004695, AC004910, AL034553, AC004917, AC005924, Z98052, AL031276, AL049643, AC006148, AF000704, AF000547, AC004638, AF030453, Z84466, AC004525, AC006001, AC004590, AC003029, AC004820, AC004671, AC004701, AC004768, AL024509, AL035685, U91323, AC005082, AL080243, AC010582, AC005736, and AL049635.
HNGER73	7891	578909	1 - 312	15 - 326	AL117546.
HNGER62	7892	578922	1 - 293	15 - 307	AA657451, AA744068, AA745459, AL783381, AA872180, AA745393, AA745533, AA024691, AA547979, AA744084, AA603881, AA650175, A V076090, AA083028, AA610432, AA085372, AA429197, AA429020, AB26253, AA631559, AA873176, AA461617, AL580250, AA601218, AA594220, AA502991, AA290878, H60553, AL251591, AL679782, AA486559, AA811208, AA668387, AA601327, AL035659, U08988, AR036572, AC004890, AP000088, AL139054, AL096701, U91328, AL035249, AC002988, AC002072, Z93241, AL023803, AC005971, AC008040, AP001053, AC006276, AC005102, AC004216, Z86090, AL049766, AL002238, AC002073, AC005291, AL034423, AC005280, AC004796, AC002352, AP000140, AC005255, AP000553, AP000557, AC009516, AL121655, AC002477, AL049776, AC004656, AC006312, AC003038, AP000045, AC005763, AC007308, AL121658, AL132985, U80459, D83253, AC009247, A246003, AL133382, AL031390, AL031685, AC005519, AL022476, AC000694, AL023553, U80017, AL080243, AC004019, AC006441, M89651, AL022326, AC002430, AC005531, AP000228, AL133448, AC003070, AC004905, AC006001, AC000095, AL035324, AC010382, AC0007384, AL024498, D84394, AL035587, AC005514, AP000501, AC0005391, AC006449, AF207550, AC005666, AC005736, AC007542, Z95116, AC006960, L34079.
HNGER73	7891	578909	1 - 312	15 - 326	
HNGER62	7892	578922	1 - 293	15 - 307	
HNGER61	7893	578907	1 - 312	15 - 326	
HNGER50	7894	576479	1 - 304	15 - 318	

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HNGER38	7895	578908	1 - 286	15 - 300	AW403530, C14389, C15076, D59467, D80164, D81026, D59787, D80195, D59502, D81030, D80166, D80022, D59275, D80227, D58283, D80391, D59859, D80193, D59619, D80210, D80240, D59610, D51423, D51799, D80253, D80043, D80038, D80269, D80196, D80212, D50079, D80219, D80188, D59927, C14331, D57483, D80366, D59689, D80241, D50095, D80045, D80251, D51022, D80378, AW177440, AA305409, D80024, C14429, D52291, AW378532, AA305578, D51060, C75259, T03269, D80522, AW178893, C14014, AW179328, T11417, AA514188, D80248, D51250, AW369651, AW352158, D80134, AA514186, D58253, AW178762, C14077, AW178775, D80133, AW177501, AW177511, D80132, AW176467, AW360811, D80268, F13647, C05695, AW352117, C06015, AW377671, AW375405, D80302, AW378540, C14407, AW1910186, AW366296, AW360844, AW360817, AW375406, AW378534, AW179332, AW377672, AW179023, AW178905, A1557751, A905856, D80439, AW352171, D51213, AW377676, D80247, AW178906, AW352170, AW177731, D59373, AW178907, AW179019, AW179024, Z21582, AW177505, AW179020, AW360841, AW178909, AW177456, AW179329, AW178980, AW177733, AW378528, AW178908, AW178754, AW179018.
HNGER26	7896	860623	1 - 394	15 - 408	
HNGE079	7897	951489	1 - 782	15 - 796	

AW352174, AW360834, D80258, D80014, D51103, AW179004, AW179012, AW178914, AW378525, D81111, C14227, AA285331, D59627, D51097, D80157, D58246, AW367967, AW177722, AW177728, T02974, AW179009, D51759, AW178774, AW178911, AW378543, AW352163, D59503, AW178983, A1557774, AW352120, AW178781, T48593, D80168, D58101, D59653, AW177723, A1552923, A1535850, AW177508, H67866, D45260, T03116, D51221, C14975, A17378533, C03092, AW367950, AA809122, H67854, AW177497, D80064, AW178986, D59317, A1535686, AW177734, D45273, C14973, A1525917, D60214, D80949, D59551, D51079, A1525227, C14344, D59474, A1525920, D60010, AA514184, C14957, A1525925, C14046, T03048, A1525235, A1525242, A1525961, A1778539, A1525215, A1525912, A1738542, H67858, C16955, C05763, Z33452, A1525237, A1525222, C14298, AF058696, A25909, X67155, Y17188, D26022, AC008278, AA8916, A62300, A132110, A62298, AF058696, A25909, X67155, Y17188, D26022, AC008278, A67220, D89785, A78862, Z34614, D88547, I82448, X82626, Y12724, A6025207, A82595, AR060335, AB002449, A94995, AR016808, AR008443, AB012117, I50126, I50132, I50128, I50133, X68127, A85396, AR066482, A44171, AR066488, AR016514, A85477, AR060138, A45456, I19525, A256615, AR052274, A86792, U87250, X93549, Y06669, A43192, A43190, AR038669, I14842, AR066490, AR066487, A30438, I18367, D83507, AR054175, D50010, Y17187, A63261, AR008277, AR008281, AR008408, AR062872, A70867, AR016691, AR016690, U46128, D13509, AF135125, I79511, A64136, A68321, AR060133, AB023656, U79457, AF123263, AB033111, AR032065, X93535, and AR008382.	HNGBE004	7898	586457	1 - 331	15 - 345
	HNGBE007	7898	734923	1 - 293	15 - 307
	HNGBEK37	7900	578914	1 - 441	15 - 455
	HNGBEK16	7900	578914	1 - 441	15 - 455
	HNGBE44	7901	800199	1 - 389	15 - 403
	HNGBE11	7902	967314	1 - 439	15 - 453
	HNGBEG07	7903	953658	1 - 609	15 - 623
	HNGBE81	7904	570236	1 - 604	15 - 288
	HNGBEE10	7905	968043	1 - 272	15 - 616
	HNGBED92	7906	654085	1 - 686	15 - 700
	HNGBED46	7907	833885	1 - 429	15 - 443
	HNGBE84	7908	781312	1 - 336	15 - 350
	HNGBEA17	7909	561293	1 - 240	15 - 263
	HNGBD293	7910	888677	1 - 214	15 - 228
	HNGBD453	7911	973311	1 - 502	15 - 516
	HNGBD19	7912	502499	1 - 434	15 - 448
	HNGBD738	7913	572912	1 - 215	15 - 229
	HNGBD76	7914	579096	1 - 287	15 - 301
AW352174, AW360834, D80258, D80014, D51103, AW179004, AW179012, AW178914, AW378525, D81111, C14227, AA285331, D59627, D51097, D80157, D58246, AW367967, AW177722, AW177728, T02974, AW179009, D51759, AW178774, AW178911, AW378543, AW352163, D59503, AW178983, A1557774, AW352120, AW178781, T48593, D80168, D58101, D59653, AW177723, A1552923, A1535850, AW177508, H67866, D45260, T03116, D51221, C14975, A17378533, C03092, AW367950, AA809122, H67854, AW177497, D80064, AW178986, D59317, A1535686, AW177734, D45273, C14973, A1525917, D60214, D80949, D59551, D51079, A1525227, C14344, D59474, A1525920, D60010, AA514184, C14957, A1525925, C14046, T03048, A1525235, A1525242, A1525961, A1778539, A1525215, A1525912, A1738542, H67858, C16955, C05763, Z33452, A1525237, A1525222, C14298, AF058696, A25909, X67155, Y17188, D26022, AC008278, AA8916, A62300, A132110, A62298, AF058696, A25909, X67155, Y17188, D26022, AC008278, A67220, D89785, A78862, Z34614, D88547, I82448, X82626, Y12724, A6025207, A82595, AR060335, AB002449, A94995, AR016808, AR008443, AB012117, I50126, I50132, I50128, I50133, X68127, A85396, AR066482, A44171, AR066488, AR016514, A85477, AR060138, A45456, I19525, A256615, AR052274, A86792, U87250, X93549, Y06669, A43192, A43190, AR038669, I14842, AR066490, AR066487, A30438, I18367, D83507, AR054175, D50010, Y17187, A63261, AR008277, AR008281, AR008408, AR062872, A70867, AR016691, AR016690, U46128, D13509, AF135125, I79511, A64136, A68321, AR060133, AB023656, U79457, AF123263, AB033111, AR032065, X93535, and AR008382.	AA707705, AA707782, AC004788, AC005208, AC006213, AC002426, AL021939, AC010206,				

					AC002040, and AC004822.
HNGDV15	7915	572902	1 - 283	15 - 297	AC005799,
HNGDV02	7916	920504	1 - 258	15 - 272	
HNGDV01	7917	916989	1 - 297	15 - 311	AC005669,
HNGDS21	7918	396889	1 - 700	15 - 714	AP000547, and AL121825.
HNGDR65	7919	572896	1 - 239	15 - 253	
HNGDO68	7920	753164	1 - 553	15 - 567	
HNGDQ36	7921	733550	1 - 435	15 - 449	AA085245, AA355671, AL137191, and UI15177.
HNGDO68	7922	753580	1 - 257	15 - 271	T52788.
HNGDO54	7923	521883	1 - 356	15 - 370	R00963, MG2017, and AC005753.
					AW151587, N34413, R52428, AA548692, AA372303, AA442528, AI821985, AA947534, AI732860, AA524832, AI446259, AW245354, AI049709, AA828641, AI744949, AI135744, AC006948, AI021578, Z93023, AI021368, U95626, AI031120, AC007537, AC007919, Z84477, AC006127, AI050348, AI246003, AC005839, AC007283, AI022098, AI079304, AI034371, AI109798, AC003963, AC006511, AC006896, AC005178, Z93783, AI096791, AI021938, AC004526, AI121754, AC005971, AC005722, AC005756, AC004130, AI049539, AP000023, AI035071, U91321, AC004821, Z69917, AI022719, AI031985, AC003663, AI049829, AC004975, AI079342, AC005354, AC006317, AI133163, U07562, AC008009, AI049829, Z83844, AC004106, W71342, AC005274, AC005841, AI109627, AI031311, Z93241, AC003099, AC005293, AI034555, AI121658, AC004477, AC005598, AI117352, AI035423, AC016025, AC009247, AC003104, Z94721, Z98886, AC005179, Z85987, Z98949, AI031602, AC005037, AC004967, Z97054, AC005288, AC005695, AB001523, AC006241, AC007395, AC002316, AC006120, AI049780, AI031775, AF196779, AC004167, AI035422, AC004584, AC004675, AC005369, AC004587, AF064861, AF205588, AC004933, AI035658, AI031589, U52427, AC007421, L78833, AC007731, AC012627, AC007917, AI121653, AI078644, AC005620, AC005738, AC005348, U95742, Z85986, AC004887, AC004033, Z84484, AF088219, Z97205, AB023049, AF069291, AP000132, AP000210, AI035400, AC005940, AC005534, AC005678, AP000356, AI022324, AC007216, AP000088, AC004491, AI022336, AC005534, AF134471, AC005815, AC005899, AC020663, AC007358, AC000052, AC005041, and AI078477.
HNGDO53	7924	574450	1 - 204	15 - 218	
HNGDO52	7925	868772	1 - 300	15 - 314	AI093647, AA716146, AA749073, R90099, AA506527, AI073736, AI191643, R45527, AI1394236, AI178266, AA988102, AI123578, AI01722, AA010543, AA729674, AI953613, AA977224, AW084266, AI471058, AI127344, AI079368, AI355607, AI890557, AI081829, W87769, AA236572, AW407241, AA358614, AA402984, H69243, AI701110, W94570, R45526, AA679112, R37845, AA424401, AI910481, AI347131, and AA402135.
HNGDO40	7926	574449	1 - 152	15 - 166	
HNGDO30	7927	574446	1 - 119	15 - 133	AC005950, and AC001228.
					AC007785.

HNGDO29	7928	526804	1 - 333	15 - 347	AC006376, L3797, AL121934, AC004236, and AL117327.
HNGDO18	7929	526514	1 - 403	15 - 417	AC006367.
HNGDO06	7930	936059	1 - 335	15 - 349	
HNGDO05	7931	932400	1 - 129	15 - 143	
HNGDO04	7932	523469	1 - 325	15 - 339	Z78304, AP000113, AP000045, and AC006071.
HNGDML1	7933	967512	1 - 522	15 - 536	RW38482, AL649326, and AW303334.
HNGDLS1	7934	860671	1 - 1029	15 - 1043	AF378532, C14014, H73530, D80164, AA547979, W61253, C15076, D80045, A1791227, AC003684, AC002519, AC002073, AL022165, AC000043, AC002559, AC004983, AL109755, AC007285, AL031293, AC007225, Z95116, AC006312, AC004707, AL020993, AL050307, AL022316, AL034429, AC007151, AL121595, AL022238, AC005971, AC002326, AL049765, AL031320, AC004876, AC008101, Z98200, L44140, AC002425, AC005071, AC006014, AP001550, AC003962, AL022379, AC005005, AC004966, AC005620, AC006012, AC007227, Z46936, AF111167, AC002350, AC005488, AC016027, AC005412, AC016830, AC004216, AC008079, AC005519, AC008965, AC002563, U07563, AC004517, AL034423, AF001552, AC004671, AL031591, AL035587, AP00356, AC000355, AL031670, AL031427, AC007011, Z97054, AC003012, AC002072, AC004967, AC002312, AC006388, AC004616, AC005736, AL096791, U74924, AL078584, AL031121, AC006023, AC005527, AC005567, AC008040, AC004882, AP000045, AC005086, AC004522, AC006011, AP000055, AP000170, AP000123, AC003026, AC005808, AC005821, AC005332, AL035086, AL133485, AC008044, AC006001, AL033521, AC002381, AC004531, AL031291, AC007637, AC004921, AC004662, AC005015, Z95115, AC005696, AC005839, AL133396, AC004832, AC002302, AL049776, AC005281, AL035400, AC018633, AL030996, AC005197, AP000313, AC004914, Z97053, AC002543, AL049631, AC004848, AL022336, AC005678, AL027476, AC005529, AC004967, AC008116, AC005328, AC004551, AC002300, U52112, Z94056, AC007664, AC004041, AC007376, AP000050, AC005874, AF134471, AC005089, AC005585, U91325, AC005632, AL049758, AC008018, AC004997, AL031431, Z68164, Z98304, AC003667, AP000193, AC004996, AC005778, AC007919, AC003836, AC004922, AC004804, AC006430, AC016025, AF129756, AC002132, AC004020, AC002551, AC009516, AC004491, AC005484, AL031848, AL049869, AC008072, AL023879, AL049781, AC003950, AF196969, AC007057, AC006312, AC008009, AC003663, Z98036, AC007021, AL034548, AC004678, AP000117, AC004084, AC006146, AC006960, AC005274, AC007684, AC005725, AC003108, AL133216, AC004560, AP000272, U91318, AC006449, AC004134, AC003690, AF024534, AL121757, AC007050, Z97959, AL021154, AP069291, U95740, AC008372, AC002369, AL050318, AC004151, AL031673, Z97630, AC004813, AL121748, U52828, AP006557, AL031295, AC004638, AL049795, AC007073, AC004019, AC004453, AL035659, AL050312, AC004699, AC008012, AL096773, AP000248, U91323, AC007546, AC004923, AP001527, AC004150, Z84484, AP000695, and AC005048.

HNGBD94	7935	796744	1 - 114	15 - 128	
HNGBD70	7936	506694	1 - 238	15 - 252	
HNGBDF58	7937	506693	1 - 562	15 - 576	N79214, N79207, and Z95115.
HNGBDF38	7938	574349	1 - 344	15 - 358	AI133044, and AC000080.
HNGBDF10	7939	968240	1 - 336	15 - 350	
HNGBDE79	7940	781680	1 - 430	15 - 444	R15702.
HNGBDE74	7941	765812	1 - 415	15 - 429	T81056, H72210, and AC003079.
HNGBDZ7	7942	860680	1 - 397	15 - 411	AA319803, AI340151, AA368329, CI4121, AI889426, AA745356, AI281622, AA604149, AF196971, AC006071, AC005785, AC007382, AI078581, AC002310, AC005914, AC008078, AC007731, AC005500, AC004821, AC004815, AP000356, U85195, AC005031, AC002470, AC003664, AC004448, AE000638, AC005409, AC007707, U80017, U29953, AI031683, AC004097, AC004797, Z84480, AC004638, AC004477, AI031681, AC004770, AP000563, U91319, AC005015, AC005944, AC004638, Z83826, AI049843, AC004653, Z82188, AC006285, AC005399, AC005037, AC005696, AC005899, AC002550, AC004236, AI031584, AI133382, AI121652, U95739, AF000133, AP000211, AP000501, Z82214, Z86090, AI049712, AF129077, AC006088, AC007666, AC005480, AI050318, AC005776, AI049776, AI109628, AI049872, AC005736, AF001549, AF165926, AC004999, AI049759, L78833, AC004125, AC006241, AC004883, AC005057, AB023049, AI034420, Y10196, Z83840, AI031228, AC004491, AC005620, Z84487, AD000092, AI034419, AF207550, AF196779, AP000031, AP000021, AP000132, AC005746, AI050341, AI117258, AC006130, AC005578, and AC004991.
HNGBDD03	7943	924933	1 - 188	15 - 202	AI523340, AI358513, AW404543, AI048969, AP000347, AP000346, AI224162, AC004842, Z95114, AC003665, AC002322, AP000555, AP000354, AI229041, AI022311, U67093, AR028159, AC007742, AI035249, AC005338, AF047825, AC005358, AI109963, AC008545, Z94056, AI031681, AC004921, AP000512, AF111169, U82828, AC006328, AD000833, AI033504, AC004124, AI008635, AI022721, AC018633, AB025051, AC002546, AB016897, AC007052, AC007785, AC004997, and Z74021.
HNGBDD02	7944	920675	1 - 172	15 - 186	
HNGBDB78	7945	772804	1 - 300	15 - 314	AP000555.
HNGBDB61	7946	742043	1 - 460	15 - 474	AA137010.
HNGBDB59	7947	688019	1 - 149	15 - 163	AI021398.
HNGBDB54	7948	574359	1 - 178	15 - 192	
HNGBDB40	7949	574346	1 - 96	15 - 110	
HNGBDB16	7950	574352	1 - 121	15 - 135	
HNGBDB04	7951	574640	1 - 149	15 - 163	
HNGBDA08	7952	959964	1 - 441	15 - 455	AA326984, and T82481.
HNGBZ54	7953	730895	1 - 437	15 - 451	AI088884, H30669.



HNGCY60	7954	827144	1 - 559	15 - 573	W79559, A916779, and AW304481.
HNGCY10	7955	968247	1 - 320	15 - 334	AA259067.
HNGCQ38	7956	544484	1 - 1014	15 - 1028	
HNGCPI4	7957	417271	1 - 587	15 - 601	
HNGCOT1	7958	663340	1 - 639	15 - 653	T99876, AA146850, and AL122007. AW273218, AA378690, AJ281818, AF791913, AF791132, AA904275, AI252506, AA601294, NS4152, AA93583, F35689, AA045734, AL301700, AA934680, AW070614, AI654525, AI754653, AW304536, AF792133, AA516226, AJ933714, AA494087, AI821714, WA5205, F30586, AF207550, AP000501, AI022238, AI080243, AC004973, AC004983, AC006077, AI022721, Z97054, AF111168, AC066511, AJ011930, AI008726, AC002126, AC000159, AC009516, AF002223, AP000704, AI034548, AC004491, AP000113, AP000045, AC016025, AI031311, AC005899, AI030318, AC004671, AC005037, AC008115, U91323, AC007676, AP000251, AC005088, AC004821, AC006023, AC005808, AP000159, AP000017, Z98200, AC004999, AC005632, AC006441, L44140, AP000030, U95742, AF196779, AC0066430, AL122020, AC006512, AC007216, AP000553, AF196972, AI031666, AC005823, AC007685, AF053356, AL139054, AC005971, AI031680, AC007066, AC004890, AC006080, AP005072, AC004913, AL049761, AC004685, AI121653, AC007390, AC006285, D87675, AC007226, AC006449, AL022318, AC007899, AI133312, AF111169, AL049869, AC019014, AC006088, AC005409, AC004686, AC009247, L78810, AL133448, AC005736, AC004019, AC004673, AC005837, AC005755, AC002395, AP000252, AC002470, U99553, AJ03147, AI133163, AP000248, AL034553, AC004526, AC005081, AC002369, AI049759, AC005624, AC004033, AI034429, AI008382, AC002301, AF117829, AP000557, AP000555, AC005280, AC008033, U47934, AL031736, AF165926, AC004996, AC009044, AP000692, AC0020663, AC016026, AI035587, AL022323, AC007308, AC004478, Z83840, AC006965, AC005089, AC002115, AF196969, AC006254, Z83844, AC005488, AC005682, AC004884, AF003626, AL034555, AI035422, AC004893, AC003046, M89651, Z97056, AC002565, AC006165, AC006101, AC005057, AP000008, Z98884, AC002425, AP000031, AC004895, AF030453, AI133246, AL031447, AP000359, AI035458, AC007731, AC012384, AC002544, AI117258, AC006126, AC005500, Z83986, AC006241, U80017, AC005841, AL121655, AB023051, Z84469, AC005696, AC006480, Z83826, AC005231, AC005291, and AL096701.
					AC004706.
HNGCOT15	7959	494338	1 - 375	15 - 389	
HNGCG39	7960	704547	1 - 532	15 - 546	H26664, and H26870.
HNGCER1	7961	961700	1 - 1702	15 - 1716	AI284640, AI046409, AI963720, AI431303, AF1754955, AA581903, AI281881, AW303196, AW274349, AI034443, AL042853, AW301350, AI046205, AI801482, AI138265, AL041690, AL042420, AI270117, AI119691, AW193265, AA720702, AI890348, AI754336, AI037683, AA469451, AI708009, AI138455, AW327868, AA521399, AI345654, AA521323, AW021583, AA491814, AI110770, AA680243, AA573797, AI613280, AW265385, AA490183, AI126450, AW069227, AI149478, AA468131, AA817817, AW439558, AW268300, AI732120, AA394271,

<p>             AI05547, AI631507, AI687343, AI040054, AI350211, AA584581, AI473943, AI754658, AI044940, AI057666, AI679124, AI192631, AI312309, F36273, AI249997, AI119984, AI0419262, AI0410040, AIW1483507, AI0370201, AW088202, N48230, AI679782, AI483223, AW080811, AI354518, AI572924, AI821714, AI792133, AI791913, AI407578, AI281903, AI254615, AI682912, AI048925, AA625057, AI629992, AI133102, AI610159, AW0276827, AW276817, AA649642, AI289067, AW270382, AI821785, AW276435, W339568, AW004911, AI561060, AA847499, AA507824, AI038785, AI471481, AW338036, AI619997, H71429, AI814725, AI354403, C75026, AI623002, I7614971, AI334435, AI980933, AV008317, AW021917, AI337504, AI568678, AW406755, AI138396, AI061338, AW029038, AW406447, AW01758, AA625706, AI859946, AA493471, AA482711, AI001538, AW438643, AI653636, AI625244, AI335711, AI134972, IAW06162, AA579179, AI281697, AW162049, AW265170, AI929531, AI375710, AI570261, AI053672, AI860020, AI246119, AI753488, H05940, AI039958, AI042856, AI8273916, I755214, I7079645, AW131457, AA501809, AI341664, AI571512, AI962050, AA584201, AI079389, AI821271, AI306028, AA984708, AW088846, I745325, AI349850, I796627, AA468505, AI339850, AA653618, AI567076, AC031101, AC005089, AI003147, AI022316, AC005529, AC002470, AI031283, AI049836, AC004825, AI031432, AI035405, AC004832, AC005670, AI022315, AC000025, AI034423, AI04121736, AI035684, U66093, AI049766, D83989, AC004990, AC005355, AC007514, Z81364, AC008372, AC008005, AI035457, AC002492, AI033325, AI0988219, AC005324, AC005940, AC006273, AC004100, AC007488, AC006274, Z93241, AC005763, AC004417, I7096757, AC007540, AC007030, AI005244, AI004626, AI121915, Y18000, AI031730, AI008583, AC006128, AC005414, AC007073, AC005913, AI023381, I02531, AC000052, AC006547, I049643, AFI96970, AC005154, AI031279, Z83844, AC002429, AI049569, AC005527, AC006251, AC005393, Z98884, Z84469, AI035639, AI035668, AI022313, AC005295, AC016027, AF015151, AI096771, AI023575, AC016830, AC005796, AC002289, AC005821, AC004647, AC004690, AC004972, AC005901, AF015156, AC005696, AF015149, AC004049, AI022337, AI096861, AI049830, X54175, AI078463, AC004827, AI049839, AP000513, AC004675, AC006213, AC007324, AP000050, AC005280, AC006241, X55925, X54177, AC005699, AC005787, AC002430, AC005250, Z86061, X54180, AC007298, AI132712, AC004941, AC005071, AC007216, AI031588, AC005180, AC007444, Z98750, AC009399, U57007, AC005921, AC005740, AP000152, AP010337, AC007384, AC005229, AF015148, AI049591, AI121603, AC005799, AC002070, AP001058, AC004770, AC005914, UI8391, AI8395, AF015157, Z93020, AI034351, AI132774, AC004491, AC000035, I51997, AC002400, AI031281, AC005527, X54181, AE227310, X54178, I78387, AF077058, AC005005, U91321, AC007666, AC009516, U91326, AC008119, X55926, AI035411, AC006153, AI121748, AC005912, AF000113, AF007510, AC005726, AI021578, AI031054, AP000359, AI022323, AC005988, AF015147, </p>
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HNGCE40	7962	860699	1 - 731	15 - 745	<p>U57009, AC002094, AC004220, AF001549, AL022329, Z97353, Z83822, AC004834, AC005212, AL021808, Z98742, M37551, AC005257, AC005216, AC006207, AP000338, AC005387, AC005541, AC005375, AL133485, U02532, AL049538, AL121934, U57005, AC005775, AF001548, AL008718, AC012039, AP00216, AC006318, AC005331, AL022322, AP000117, AC005730, AC002300, AL049758, AC002059, AC007051, AC007011, AF117829, AC007919, AF134726, AP000365, AC007252, AC004986, AC006120, AL021940, AC006087, U18393, X54176, AL109623, AC006486, AC003982, Z99716, AC006208, AC002350, D87675, AC005245, AL031848, AL049873, AL049761, AC004876, Z97989, AL049759, AC004815, AB020865, Z99916, AC010072, and AF045555.</p> <p>AW302048, AL039187, AA230155, AL188049, AL821382, AA730635, AA538404, T07225, AL279417, AL567391, D58782, AA664604, AL536625, H48768, AA878140, AA380441, AA780933, AA448838, AW167154, AL096738, F32710, AA516047, R92640, AL120343, F31619, AA846923, AA448838, AA604843, AL079423, AW117740, AA613627, AL821044, AL754291, AA297789, AD44127, AAG30854, AL046746, AL915081, AW021917, W327852, AA657835, AC004552, AC002551, AL109952, AL109985, AE000658, AL139054, AL049780, AL049759, U91326, AL251973, AC005808, AC002363, AC006330, AC005962, AC007364, Z95152, AC004526, AL031311, AL049540, AC005409, Z83845, AF130343, AC005690, AC005701, AC004805, AC007216, AC004757, AC005209, AL049777, AL031666, AF064858, AC005701, AC004805, AC005747, AC002302, AC005304, AL133445, AL022163, AC007225, AC002039, U85195, AC003108, AC005184, AL049712, U91325, AL003147, AC002990, AL022322, AC008012, AC006441, Y10196, AL031657, AC000353, AF001549, AC005913, AC002119, AC005971, AC006958, AL035638, AC004999, AC006360, AC006515, U95743, AL034402, AC010077, Z99127, AC005902, AC005082, AC003101, AP000557, AC006312, AC002365, AC003971, AC005274, AC007285, Z93929, AC002301, U80460, AC003982, AL121657, AC005911, AC006445, AC004913, AL031286, AC003665, AL031433, AC005339, AC002544, AC010205, AC004099, Z84469, AL109627, AC012384, AC005288, AC007191, AC005291, Z98050, AL049776, AL080243, AL023803, AC007066, AC005257, AC002691, AC020663, AL022067, AL031431, AL121754, AC004941, AL031283, AL050318, Z93020, AL033392, AL133238, AF111168, AC005670, AC007773, AC008115, AC002430, AC003330, AL022329, AC005919, AC004216, AL050317, AC007338, AC007536, AC008085, AL109984, AC002350, AL035588, AF001548, AL096712, AC007384, AL096701, AC004813, AC007731, AC004887, AC002457, AL021546, AC005500, AC016830, AL133355, AP000104, AC005011, AC006120, AC005666, AC005531, AP000599, AF165926, Z84480, AC006487, Z83844, AL031276, AC005859, AC005884, AC005527, AL078638, AC005726, AL035450, AC004491, AC004185, AL035685, AF031078, AC004148, AL079340, AC002465, AC002480, Z84466, AL033522, AC005057, AC002377, AC002477, AC004605, AL133247, AC004859, AC003688, AL035684, AF134726, AL022322, AC006947, AL135744, AC007537, AC007011, AC006138, AL049539, AC008149,</p>
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HNGCC02	7963	638114	1 - 554	15 - 568	<p>AF030876, AP000045, AC008273, AC005284, AC008008, AL117330, AL022476, AC006030, AC002059, AF001552, AC009516, AP000555, AC003041, AC004983, AL117258, AC005533, AC005154, Z83840, AC002045, Z97989, AC007226, AC007565, AL121578, AC004841, Z98949, AC005755, AC006468, AC005049, AL035587, AC000094, AC004222, AC007240, AC006160, AC005529, AL121652, AC007676, AC005768, AC005730, AL132712, AC005578, AC005880, AC006241, AC005182, AL035403, AL118497, AL035681, AC006050, AF091512, U80017, AC000004, AC005914, AL121825, AC004927, AC000085, AC005488, AL050341, and AC007541.</p> <p>AW028400, AL063720, F62673, AL138265, AL368745, AL284640, AL679782, AL041690, AL046409, AA581903, AT080099, AA610491, AL042753, AL085719, AW162049, AL929531, AL138455, AL951889, AL956131, AL421841, AA469451, AL431303, AL963095, AL960020, AL357551, AL281881, AL962050, AW193265, AL110770, AL43242, AL340453, AL951928, AL718446, AL119691, AW303196, AL061334, AA507547, AA713815, AL814753, AA594215, AW302013, AL048925, AW103758, AL345654, AT754658, AA513141, AW301350, AA594215, AL305766, AW406659, AL358343, AL120269, AL350211, AL889781, AW088202, AW029038, AW30766, AA491814, AW247819, AL801600, AL613280, AA515224, AW407578, AL688846, AL287485, AL471481, AL590689, AW276827, AL912322, AL341664, AL375710, AL507076, AL358229, AL570261, AL289067, AA491284, AW261871, AW169537, AL696962, AL482711, AA652764, AL801591, AW089927, AW102955, AL801482, AL754336, AL291124, AL339850, AA127353, AL281903, AL679132, AT732186, AL040130, AL821271, AL038785, AA584082, AL192631, AL928790, AL049722, AL358301, AL037683, AW419262, AL345681, AA908687, AL345675, AW238278, AL291268, AL042853, AL628288, AW327868, AL567674, AL635274, AA559586, AL619997, AL865905, AA917683, AL859742, AA164251, AL709365, AL367975, AW138086, AL471943, F99889, AL475569, AT799642, AA977743, AW104748, AL379063, W95841, AL610607, AW162288, AW276932, AL358571, AL469172, AL376100, AL921649, AA490183, AW166815, AW085740, AA521399, AL564496, AW148792, AL697208, AW193609, AW304584, AL871225, AL696793, AW088616, AL133986, AL564185, AL079645, AL366729, AL676218, AW265009, AL824562, AL623720, AL499181, AW080134, AA846935, AL937850, AL674873, AW074130, AL365988, AA649642, AL718953, AA665330, AA192740, AW088058, AL917271, AA502155, AW227238, AW057877, AL042420, AW062724, AA350859, AA179944, AW340844, AL307201, AL282832, AL439210, AL053606, AL151261, AL921188, AA847499, NS3150, AL521679, AL445582, AL633025, AT744995, AL077024, AA594145, AL119984, AA747276, AL036572, U91328, AC004859, AL049569, AC006004, AL021546, AP000966, U91323, AC006125, AC000052, AC008124, AC005071, AC004019, Z89941, AL129756, AC005291, AF001349, AC004884, AC004020, AC003101, AC005846, AC005768, AL031848,</p>
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				AA779260, and AC004895.
HNGBW07	7964	1 - 425	15 - 439	
HNGBS77	7965	1 - 524	15 - 538	
HNGBR42	7966	1 - 401	15 - 415	
HNGBOO1	7967	1 - 132	15 - 146	
HNGBN12	7968	1 - 386	15 - 400	
HNGBI40	7969	880778	1 - 343	AA782338. Z96199.

HNGBF25	7970	678767	1 - 584	15 - 598	AA054162, and AF130342.
HNGAZ70	7971	757413	1 - 345	15 - 359	R34132, and AL048966.
HNGAZ56	7972	733631	1 - 467	15 - 481	AA885390, NG4652, A1694923, AA447143, W56786, W56564, AP001053, and AP001052.
HNGAZ08	7973	959977	1 - 422	15 - 436	A1721476, and AA825395.
HNGAX93	7974	792525	1 - 403	15 - 417	W87440, and AC006511.
HNGAW30	7975	723632	1 - 530	15 - 544	R97185, H47494, A1806978, A1052640, A1218923, and 294721.
HNGAV20	7976	669901	1 - 420	15 - 434	H94026, H63237, H94115, H63315, and A1524673.
HNGAR02	7977	920736	1 - 552	15 - 566	AA054152, AA587002, AA385098, T18597, AA385325, Z32822, R45895, R29637, D33161, D61185, AA585101, Z32887, D59751, C15406, R28735, R29445, A157740, C15069, A1541365, A1523116, A1557262, R28890, A1541356, R28965, Z28355, AA585155, Z33559, A1526078, A1526140, A1525500, AA170832, AA585378, D54897, AA585639, D60765, DA0844, D59436, R29218, A1557718, A1557727, A1541517, A1546099, A1557731, A1535639, AA585329, D51433, R28907, R28895, D54850, A1541205, A1541535, A1546971, A1526184, A152556, C16294, C16315, AA283326, A1541383, D52323, A1546875, A1547250, A1526016, A1540903, A1557763, A1547039, D61254, D59458, D53447, A1557734, A1541523, A1557084, AA385476, C16292, C15120, C15762, D52835, A1557809, D53472, A1557807, A1557787, A1541346, C16300, A1541013, C16293, Z36724, A1525306, AA585356, C16305, C15737, A1541374, A1541034, A1525339, A1546831, A1547202, A1557533, A1557408, D60730, A1557758, A1546945, A1523431, C16296, A1526117, A1526191, A1547196, A1526194, A1555660, A1557602, AA385430, A1526112, R29179, A1526024, Z30131, A1525320, D57186, A1556921, A1540974, A1541307, A1526109, A1546996, A1541321, A1557852, A1540967, A1546891, A1547006, A1525856, A1557279, A1526158, A1557808, A1546829, A1546901, A1557317, A1536138, C14208, A1525168, A1526146, A1541422, R29362, AA585453, A1526193, A1541402, R29172, A1541492, A1526113, A1541515, C16290, A1557264, R29177, A1557799, A1541527, A1557039, A1523114, A1557810, AA385389, A1556967, A1541516, A1541423, A1526176, T19407, A1547189, A1525656, A1557041, A1526073, A1524904, A1541027, A1547137, C14210, A1552076, A1557786, T41289, AA514191, A1541510, A1526205, A1546954, A1526180, D61060, AA585434, A1546994, A1525332, A1552586, A1526169, A1526187, A1541506, A1541415, A1557238, T41329, AA385420, A1524891, AA585117, AA585440, C14322, A15239433, A1540920, A1546828, A1557796, A1524890, A1557785, A1541345, C14391, A1557285, A1546855, AA174170, A1547158, C14723, A1557082, A1547026, A1540882, A1541075, A1526026, A1540928, A1540924, A1541514, D51413, A1547122, A1546841, A15577802, A1541017, A1547138, A1541390, A1526125, AR062871, A25909, A1038835, X82786, Y09813, X76012, AR031358, AR031365, A1244005, A124004, A1082186, AR038762, Z32836, AR054723, X81909, D50010, X53486, D13509, A124004, A20702, AR062872, AR062873, A20700, A43189, A43188, A1244006, A1243486, AR017826, D78345, AR017907, AC005913, A1244003, AR003381, Z30183, A1213384, A62298, AR050070, A82595, A82593, AF0606072, A98420, A98423, A98436, A98417, A98427, X82834, and

HNGAQ75	7978	766512	1 - 167	15 - 181	L36913. N838037, AA384125, AA336962, AA377189, AA829154, AA828739, AI950593, AC005484, AC004106, AI031281, AI003392, AI034554, AD000813, Z95114, U95739, AC007050, AF205388, AC003103, AC007786, AC005375, AP000556, AC009405, AC006236, AI021707, AI049636, AC005529, AF019413, AP000502, AC000120, AB026898, AC004152, Z98946, AC004966, AF001548, AP000992, U91121, AC003664, AC005353, AC002365, AC007371, AP000237, and AF107258.
HNGAQ73	7979	574649	1 - 277	15 - 291	
HNGAQ49	7980	574652	1 - 159	15 - 173	Z95126.
HNGAQ38	7981	574658	1 - 113	15 - 127	
HNGAQ37	7982	575492	1 - 136	15 - 150	AI418661, AA452325, T07327, F31867, AA632556, AA748826, AA626595, AA904211, AA298362, W63553, AA211734, AA581247, AW023111, AI370170, AA069255, AA489327, AI758424, AA496724, AA084609, H73550, W96277, AI973173, H90878, AA489330, AW130350, AA719847, AI567391, AA020873, P05830, AA984857, H90114, T62543, AA837771, AA481887, AW419389, AA668587, R99144, F23294, AA683069, AA443587, AI742168, AA568314, AI446478, T83057, AA579188, R93858, AA021429, AI431513, AA018588, AA021428, AA736488, AI300818, AI310992, N73021, AI037533, H84975, AA441810, AI889579, AA018777, AA019939, AA479877, AA019872, AA610789, F16671, AI821273, AA714073, H07953, AI160786, AA722505, AI583291, AW151935, AA523695, AW408596, AA113273, AA229422, AI019818, AA612578, AA086435, AA936718, AA808036, AA091982, F31811, R67701, AA613399, AI368732, AA452887, AA577783, AA642809, AI733717, AA3302661, AA668905, AA076575, AA226357, AA315361, AA118170, AA320105, AA226356, AD21762, AI858889, AI680547, AA243976, AA640310, AA324288, AA157837, AA425924, H58354, R64640, N27615, AA502193, H90845, AA6310923, AW162303, AA583386, AW029769, AW162047, T65895, AW161786, AW019964, AA579281, AI135563, AA608570, AA205436, AA847502, Z84469, AI121915, AC002477, AC002010, AC006480, AC005971, AC005947, AC006275, AC004257, AI109952, AC004756, AC005208, AI05078, AF000501, Z85996, AP000692, AC004076, AI035691, AC003109, AC007546, AI050332, AC004890, AC005225, AC003243, AF001552, Y11107, AP000362, AC005366, AC005009, AC004814, AI118516, AI024474, AI035530, AC004408, AF196969, AI030995, AI035071, AI023283, AC005378, AI035687, AC004599, AC000029, AC002432, AC004859, AI009181, AC005039, AP000553, AC005014, AC007057, AI049872, AI022323, AC005899, AC005013, AC007363, AC008009, AC005736, AC006017, AC005828, M13792, AF053356, I34294, AC005837, AC005921, AI035086, AI023878, AB020864, Z93241, AC004878, AC007055, AP000345, AC003007, AC007199, AC004796, AC006050, AC006390, AC005031, AI031846, AF001549, AC005577, AC004050, AI121603, AI031283, AC004381, AC005207, AI020995, AC004999, U80017, AB020690, AF073485, AC005190, AF141309, AP000319, U51280, AC004789, AC004780.

				AC002985, AC000075, AF037338, AC005790, AC000084, AC005222, AL078611, AC002491, AL049576, Z83847, AC005355, AL022333, Z98885, U82668, AL117351, AL109798, AL023096, AL022322, AP000687, AP000167, AP000052, AP000120, AP000142, AC005049, AL021155, AC002119, AC004685, AL049795, AC004823, AL031680, AL031291, AP000090, AC006088, AC004518, AL033521, AC002418, AC004525, AC002203, AC004686, AC004967, AF139813, AP001548, Z83843, AC007388, AL031427, AC007676, U32111, AC005184, AL133353, AC007227, AC007014, AL121769, U91323, AL035405, AC005082, AL022721, AP000688, AC004386, AC006305, AC006582, AC007537, AC005041, AL135744, AL049869, AC004228, AC002365, AC008038, AC007240, AC003101, AL031733, AF111168, AC001228, AB026898, D87673, AL132992, AC005332, AL008725, AL031297, Z92547, AP001053, AC005220, AC002310, AC005529, AC006511, AC005625, AL133245, AC007446, AC005015, AL133163, AF111169, AC007421, AL121923, AP000689, AB003151, AL080243, AL049631, AL1031447, AC005578, AL031276, AC004874, AC006013, AC006196, AC005228, AC003029, AC002301, AL109853, Z95115, AL022396, AL132777, AC004813, AC005914, AC004694, AP000358, AP000359, AC003071, AC006961, AP000121, AP000053, AP000168, U95739, AC004905, AC004526, Z82174, AL133448, AB020866, AC009247, Z93017, AL021939, Z63709, Z83820, AC000052, AL049829, AL049569, AC004019, AC004024, X84664, AL008715, AL035659, AL022314, AF191687, Z82203, D86960, AL109865, U63630, AP000310, AC006154, AL096702, and AP000072.
			AC005815.	
HNGAQ14	7983	574660	1 - 130	15 - 144
HNGAQ02	7984	920736	1 - 206	15 - 220
HNGAQ01	7985	921434	1 - 148	15 - 162
HNGAP69	7986	513808	1 - 653	15 - 667
HNGAM31	7987	426200	1 - 487	15 - 501



AA320852, AA503258, AA362650, AI049722, AI432814, AA635067, AI270476, AW337454, AI745291, AA504925, AA445498, AC005971, AF053051, AC005225, AC004193, AI003147, AI216158, AI049679, AC007055, AC007371, AI021603, AC006001, AF053356, AC005081, AP000112, AI21852, U80017, AC005412, AI109758, AC005324, AC005932, AI049743, AI135744, U92032, AI031286, AC006014, AI022311, AF045555, U91321, AC005939, AP000513, AC005031, AC004099, AI008582, AC009247, AI132777, AC005527, AC002288, AP007899, AC006960, AC006254, AC005516, AI008635, AC005821, AC003102, AP000044, AI139054, AC002400, AC006006, AC004821, AC006023, AI021918, AC005585, AC004955, AI17258, AC005529, AC004134, AC000025, AC005057, AF064866, AC005678, AC002545, AC004150, AC005808, AI049775, AC004842, AC005434, Z99128, AI132712, AI0200867, Z98745, AI1109527, AC003101, AI136501, AC004534, Z99128, AI132712, AI0200867, AC005037, AI109628, AC004963, AC000092, AI080317, AI022476, AC008169, AI17354, AP000030, AC007878, AI035494, AP000884, AI122992, AC006038, AC0011594, U07000, U95740, D87675, AP000208, AC005736, AJ246003, AC003109, AI049539, AC007011, Z84466, AC005255, AI049776, AC009516, AI109654, AP000247, AI110502, AI009181, AF123462, AC004125, AC005666, AC007226, AC007666, AC005488, AP000212, Z97832, AI049745, AC000032, AC006333, AP000355, AC008044, AF064861, AC005484, AC005694, AC005221, U95742, AC004895, AC004263, AI050318, AC004491, Z81008, AP000688, AI049872, AC005914, AI121655, AC004974, AC000959, Z92542, AI096701, U63721, AP000505, AC005459, AC004687, AI080243, AC005231, AC035699, AC004492, AC004526, AI034420, AC006030, AP000694, AC006344, AC006285, Z95114, AI035658, AC007546, AC008573, AI021897, AI031577, AF196779, AI078474, AC003665, AC002544, AC008101, AC002126, AI121595, AC005520, Z95126, AP000215, AC005332, Z68870, I78833, Z99716, AI021391, AC004447, AC016831, AC004796, AI035405, AC007308, AI049869, AC016830, AI021393, AP000045, AC002301, AC009479, AC004814, AC005405, AC007308, AI049869, AC016830, AI021393, AC004832, AP001549, AC002351, AC002716, AI031587, AI080276, AC002067, AI109984, AC005901, AC002537, AC008018, AC009248, AI049795, AC000120, AC005996, AC005291, AC005006, AI023253, AC005590, AP000512, AC016025, AI031591, AI008639, AC007066, AI035587, Z85987, AC005682, AP000552, AF111168, AC006132, AC007298, AC002565, AC003029, AC005409, AP000134, AI078593, AI031848, Z98048, AP000047, AC006141, Z84487, AI034417, AC005104, AP000553, AI049780, AI035249, AC005209, AP000130, Z93783, AC012627, AC005837, AI031680, Z94721, AC006449, AP000692, AP000477, AC005924, and AI035657.
AC004465.
T89724.
H78418, AI020804, H68012, T87102, N77399, AA744206, AA713765, H93975, H58385.

AI223968, AA509597, AA601186, AI263494, AC008116, AF190884, AP000564, AF030453, AI031311, AC005088, AF068624, AI035106, AP000151, AC004197, AI023913, AC003007, AB003151, AC011718, AC008137, Z93241, AP000010, AC005632, AC002407, AC004491, AP000454, AC007546, AC005003, AC005846, AC005530, AB023048, AC009247, AP000298, AC002115, AC004263, Z95703, Z83821, AI020991, AC006101, AF039907, AC006987, M59199, Z84487, AI235960, AI131016, AC004985, AI109952, AC004223, Y10196, AC00018, AC002426, U78027, AC000387, AI031577, D84394, AC005366, AC007358, AP000044, AC004929, AC004883, AC007156, AP000472, AC005291, AP000347, AC007748, AC004216, AC007565, AP000511, AC005225, AC003037, AC005913, Z97053, AC007340, AC004622, AC007766, AI035415, AP000350, U91326, AC005562, Z99943, AP000116, AC006285, Z84477, U73643, AI049569, Z99716, AC005399, AI035587, AC006948, AC009516, AC004914, AC009263, AC006572, U47924, AC006509, AC016025, AC007388, AC000003, AF187320, AP000552, AC005568, and AC007057.					W88982, AA741151, AI699945, AI915838, AI806991, AI911962, and AI022328.
HNFIY76	7992	767681	1 - 341	15 - 355	AA021619.
HNFIW53	7993	467056	1 - 436	15 - 450	AA021619.
HNFIW14	7994	658129	1 - 253	15 - 267	AW363863, AT741868, AA181596, AW450052, and AFI17754.
HNFTI17	7995	429602	1 - 559	15 - 573	AC003006.
HNFIN07	7996	953330	1 - 512	15 - 526	H67460.
HNFIID11	7997	966347	1 - 421	15 - 435	AI475658, AW300535, AA769413, AI970294, AI062597, AI262866, AI288806, AI264118, AI056197, AI021947, AI480037, AI818548, AI803669, AI092753, AI379065, AW450384, AI140316, AI242596, AI436296, AI199008, AT784541, AI819414, AA994821, AA242747, AA431259, AI814761, AA577250, AI275187, AA090652, AA417974, AA243870, AA862672, AA746639, AV340129, AA633304, AA878919, H23830, AA004808, AA830716, AI027827, AA947663, AA948421, AW023951, and AFI32948.
HNFIAS9	7998	739358	1 - 533	15 - 547	T89075.
HNFIHV59	7999	951005	1 - 1111	15 - 1125	W96277, AA846942, AA489978, H01110, AA426451, AI048901, AW151018, AA3569179, AA579399, AW408767, AI020873, AI022323, AC005244, AC004832, AC002511, AC004876, AC007308, AI031577, AC003101, AC005057, AC016027, AC016830, AP000695, AI096702, AC005562, AC005355, Z85987, AP000099, AI031985, Z94056, AC004647, AI035423, AC006388, AFI09907, AC002310, AC002425, AC006958, AI035684, U07562, AI109827, U62631, AF038458, AC005971, AI078634, AI133243, AC005736, AC007193, AC003108, AP000245, AP000036, AC004851, AI031295, AI031228, Z84484, AC005962, AP000033, AP000509, AP000112, AI003147, AC002996, AC007191, AC004792, AC004381, I78810, AC005274, AP000689, AI031591, AC005378, AC005412, AC005783, AC004972, AC004963, AI031291, AC007041, AI133246, AC006511, AC005544, AC002477, AC006441, AI031255, AC005529, AP000008, AC005940, AP000501, AI096701, AC005899, AC005225, AI031774, U62293, U63721, AC004966, AC007917, AI021977, AC006360, Z93016, AC020663, Z98304,

				AC065778, AC005920, AC009178, AF134726, AC005039, AL031846, AL031283, AC008372, AP000260, AC006040, AL031230, AC007790, AP000167, AP000052, AP000120, AF088219, AC005525, AC006430, and AC004675.
HNFX58	8000	735299	1 - 660	N73263.
HNFXV96	8001	716913	1 - 923	AL236102, R24951, RI4228, AA256037, N80330, A1740979, AA781179, AA991559, AA757102, AL262320, AA770189, AA398687, AA621291, AA885058, AL381911, AA831699, AL026903, AL698917, AW338905, AF679899, AL040709, and AC005263.
HNFXU61	8002	741901	1 - 349	AC006275.
HNFXR36	8003	735297	1 - 433	AA206774.
HNFXA09	8004	961165	1 - 450	H83638, R09824, R85639, R84674, and H83639.
HNFXS84	8005	783199	1 - 379	
HNFXJ65	8006	574598	1 - 81	
HNFXJ42	8007	526844	1 - 105	
HNFXJ17	8008	574597	1 - 170	
HNFXH36	8009	574601	1 - 185	
HNFXH32	8010	574605	1 - 227	
HNFXG80	8011	574602	1 - 59	
HNFXG18	8012	574608	1 - 261	N98823.
HNFXG06	8013	936086	1 - 282	AL284583, AL008629, Z31001, AB023051, AC005225, AL133245, AL034549, AC005911, AC004895, AC006480, AC006023, AL020993, AP000512, and AP000345.
HNFXG88	8014	522077	1 - 314	AA700916, AL048002, AA605266, AA748140, AL246884, AA229034, AA229080, AA187277, AL285453, AA181070, AA991792, AA7410715, AL17827, AA670456, AA155784, AA226142, AA452998, AA409893, Z93919, T71765, AA659832, AL035086, AC005207, AC005482, AL049712, AF001549, AL035555, AC004815, AC005157, AC002470, AC016027, AC0016830, AP000510, AL033533, AL049843, AP000555, AP000031, AC007382, AL118510, AC006359, AC006312, AC004491, AR036572, U91328, AL109963, AL049749, AF165926, AC007308, AC004821, AL049869, D16561, AC004019, AF111168, AC005295, AC012384, AP001053, AC005078, AL008721, AC004905, AC000353, AL022069, Y10196, AL035400, AC007376, AC007637, AF024533, AC002477, AC004587, AC006450, AL133448, AC005225, AC004560, AC006111, AC005531, AC002425, AC009294, AC006449, AC005049, AL009181, AP000692, AC004583, Z82194, AC007242, AC004685, AC004878, AC004148, AC005071, AC002544, AC005484, AP000952, AC002480, AC002394, AC002040, L44140, AC005914, AL139054, AF196972, AC006480, AP000691, AC010169, Z82206, AC005030, AL020995, AC005940, AC007226, AL031584, AL109628, AC007842, AL022165, Z84480, AL035209, Z97989, AL031311, AC005158, AC004938, AL035683, AL096801, AC006505, Z95115, AL021808, AC004383, Z93023, AC005520, AL031277, and AL022238.

HNFGE66	8015	860896	1 - 358	15 - 372	AW292971, AA993724, and AL049557.
HNFGE52	8016	522293	1 - 346	15 - 360	
HNFGE37	8017	574609	1 - 210	15 - 224	AI537253, AF009039, AB020717, AP000276, AP000037, AP000105, AI006855, U45479, D85682, and AP000275.
HNFGE80	8018	571306	1 - 231	15 - 245	
HNFGE41	8019	504165	1 - 140	15 - 154	AW402309, AA351072, and AB007945.
HNFGE81	8020	778250	1 - 531	15 - 545	
HNFGE92	8021	790617	1 - 413	15 - 427	W21191, AA032052, and AA456218.
HNFGEA85	8022	521880	1 - 408	15 - 422	AA130623, T73021, T60029, AA226532, AI354847, AI520748, AA209436, AI567391, AI025353, AI018726, AI929298, AI929825, AW157180, AI679294, AW132065, H63515, H62137, H69577, H53255, AA653291, AA626840, AI859618, W32993, H94979, F23235, F33184, R66121, AA418696, AI671077, AA584098, AA418757, AI679871, N76251, AA468974, AA230025, AA468371, AA228368, AA224889, AA468505, AA228269, AA228442, AA224816, AA257621, AA467943, AA314404, AA425924, AA614254, R94909, AA487720, AW275763, AV084431, T05617, AI047480, AA126975, AI469125, AA211464, AW023975, AI683426, AA573214, Z82215, AC005231, AC002288, AC005203, AI46367, AC00379, AF124523, AC006599, AC002312, AF118808, AP006009, AP001052, Z97196, Z95115, AF195658, AC005527, AC006530, AC000025, AC006111, AC005529, AL035423, AL050318, AC006561, AI049697, AC004841, AC002126, AC005325, AL049780, AF091512, AL009175, AC005015, AC006536, Z93023, Z77249, AC007216, AC005225, AC003689, AC004887, AC004966, AC004663, U91318, Z83388, AC004913, AI003147, AP000503, AC005520, AP000505, AC005971, AC004036, AC004812, AC007688, AC009247, AC000052, AC005081, AF001548, AC005180, AC007387, AF050154, AI006996, AL022318, AC005545, AF031076, AC008282, AC007566, Z84484, AF134726, AI031680, AC007666, AC007934, AC002985, AC016831, AL035587, AC005684, AC007308, AC005193, AC004678, Z98044, AL031311, AC005011, AC006511, AC002045, AF045555, AC005255, AL132716, AC008539, AC005736, AL096766, AP000553, AP000210, AP00132, AP000501, AC009516, AC002039, AL139034, Z97630, Z93244, AC005482, AP000048, AL031589, AL050332, AC005914, AC005028, AC016025, AC004539, Z99128, U07361, AC005578, AC005288, AF053356, U80017, AP000141, AC005899, AP000065, AL034420, AC003982, AC002551, Z82173, AC002369, AL021878, AL031774, AF031078, AL049843, AC005372, AC005284, AF003309, AL049869, AB023052, Z82190, AL031846, AC006571, AF030876, AL022330, AC005562, AL021937, Y14768, AC007386, AC005046, AC002470, AL132987, AC004139, AC003957, AC001036, AC006512, AL008582, AC004674, AC004262, AC005089, AL049793, AL049760, AL132712, AC004084, AF196779, Z94044, AC007551, AC004447, U91323, AL022476, AC005037, Z82178, AL021366, AC006084, AC004895, U95090, AC004983, AC006487, AL022721, AL031005, AC000035, AC005821, AC006130, AC007226, AC006468, AC004152, AC004265, AL031282, AC004686, AC000294,

HNFGA57	8023	571305	1 - 208	15 - 222	U47924, AC007993, AL034538, AP000555, AL078581, AL035658, AL031123, AL076638, AC005531, AC005291, U62311, AC005412, AL096791, AL133448, AD000092, AC000085, AC005391, U73737, AC020663, AC006538, AC007225, AC004482, AP000462, AP000689, AL022313, AC005332, AC005952, AL121658, Z95152, AL034422, AC000039, AL080243, Z49155, AC005793, AC002350, AC010582, Z83843, AP000031, AL121653, AC004032, and AP001054.
HNFFL64	8024	578096	1 - 278	15 - 292	H81542.
HNFFR38	8025	455273	1 - 732	15 - 746	
HNFFQ29	8026	860905	1 - 392	15 - 406	AA954660.
HNFFQ20	8027	836239	1 - 484	15 - 498	H30642, and AL049552.
HNFFL57	8028	786899	1 - 410	15 - 424	R71423, AA649995, AA348429, H00226, AA442374, AW363180, AL806931, W35309, R77144, W92109, AA628013, N39838, and H27628.
HNFFP05	8029	932432	1 - 145	15 - 159	N56475.
HNFFC75	8030	767453	1 - 220	15 - 234	AL884861, AA679353, AL047493, AA363027, R48980, AL537800, AA452843, AA910783, AL377396, AA541532, AA857812, AA376896, T08386, AL580979, AL037777, H38669, T90477, AL362442, AA253451, AL191937, AA290802, AL361090, AL570805, AA831408, H24953, AA295893, AA058312, AL280574, AL421950, AA295899, AL049630, AA599080, AA769141, AW026305, AL348467, AW161459, AA219349, T60940, AW161879, AL803767, AL191343, AW268329, AL003797, AA936548, AA746939, AA304790, AA669957, AW327555, AA528574, AW265688, AL120004, AL538363, AA528503, AA809125, AL289050, AL64568, AL284092, AA809089, AA313075, T56025, H65697, AA772704, F11421, T17332, AL334775, AA283081, T98915, AW363085, AA581317, AA650447, AA326867, AL689198, AL274697, AL469392, AL860021, AL098842, AL135383, AA890060, AW168510, AL008635, Z82097, AL007684, Z73417, AL033072, AC004859, AF196969, Z82182, AF003626, AC005004, AC002563, AF001059, AL109983, AF139813, AC004712, AL021155, AL023581, AC004770, AC004228, Z82248, AL031590, AC007450, D86995, AC005280, AF024534, AC008150, AC005519, AL021453, AC002454, AL109623, AL031666, AL066216, AP000264, AP000035, AL000100, AL050318, AC006080, AF029308, AC004616, AC004655, AC006976, Z82250, AL133245, AL132712, AC005520, AL109847, AC007011, AL021917, AC005779, AC002404, AC005690, AC002350, Y00596, AC004185, M17262, U15177, AC004656, AL035588, AC006050, AC005873, AC007193, AC005300, AC004922, AL049745, AP000962, AC002982, AC004088, AF024533, AC005086, AC011456, AC012085, AC007686, AL111169, AF035968, AC000082, AC003029, AC004673, AC005071, AC007160, AL023876, AC002094, AC007860, AC006946, AC007880, AC005335, AC006505, AL021977, AC006347, AC004854, AL031659, AF124730, AL008631, AC002073, AL022318, AB014079, AC006139, AC004927, AL117342, AP000514, AL117354, AC004132, AL079342, AC006115, AL133550, AC006512, AC007934, AL022334, AC005316,

HNFBY24	8031	677114	1 - 363	15 - 377	Z59529, AL034402, AP000513, AC007277, AL031000, AC003682, AC005666, AL022165, Z85996, AC000378, AC005219, AC007917, Z98304, AL035249, AL031283, AC005041, AC000392, AC003002, Z98743, Z98043, Z95115, AC004841, Z85986, AC004966, AC005578, AC006948, AC005512, AC007030, AC004491, AL096791, AC004771, AP00128, AP000206, AL031672, AC004408, Z82194, AP000245, AP000553, AP000938, AC009516, AC002365, AC007308, AL021393, AC004581, AC004554, M19508, AL021391, AC005317, AL121748, AC005624, AC004785, AC005480, AL031595, AC005846, AC004891, AC006576, AL034417, AC004552, AP000352, AL133132, AL121652, AL034549, AC006372, S65785, AC005593, X55448, AC004797, AB012168, AC004534, AF134726, AC004149, Z95125, AC005593, AL035659, AC006146, AC006011, AL078638, AL049843, AC005828, D49683, M55987, X95887, AC003965, Z98882, Z73964, AF184110, Z98051, Z93096, AL117351, AP000502, AF019413, AL031735, AC003957, AL020997, AL021940, AC002432, Z84469, AC006059, AC005906, AL049839, AC004851, Z69706, AC002401, AC005355, AL022721, AC005884, AP000509, AC005053, AB014077, Z81010, AC004209, AC004611, AC005182, and AC007868.
HNFBY24	8031	677114	1 - 363	15 - 377	U82757, AL049692, AL049745, AC005764, and Z92542.
HNFBY24	8032	936099	1 - 404	15 - 418	H67644, AL079695, R15238, T26386, and R12358.
HNFBY24	8033	685514	1 - 383	15 - 397	AA039447, A1765745, W27268, AL137465, and AFI59447.
HNFBY24	8034	783211	1 - 479	15 - 493	H74104.
HNFBY24	8035	861004	1 - 878	15 - 892	
HNFBY24	8036	529966	1 - 156	15 - 170	AL022098.
HNFBY24	8037	529967	1 - 267	15 - 281	
HNFBY24	8038	518637	1 - 334	15 - 348	Z85987, and Z94161.
HNFBY24	8039	529970	1 - 296	15 - 310	Z55913.
HNFBY24	8040	507312	1 - 841	15 - 855	
HNFBY24	8041	529971	1 - 321	15 - 335	
HNFBY24	8042	529973	1 - 146	15 - 160	
HNFBY24	8043	556464	1 - 380	15 - 394	N65923, and AFI09907.
HNFBY24	8044	960222	1 - 347	15 - 361	R94859, H65499, and AC005920.
HNFBY24	8045	574972	1 - 521	15 - 535	AL031728.
HNFBY24	8046	921029	1 - 412	15 - 426	AA019957.
HNFBY24	8047	601639	1 - 590	15 - 604	AC007225.
HNFBY24	8048	861030	1 - 391	15 - 405	AA971408.
HNFBY24	8049	730953	1 - 392	15 - 406	AA235166.
HNFBY24	8050	785736	1 - 426	15 - 440	AA251806, AW008517, and AL035530.
HNFBY24	8051	955894	1 - 498	15 - 512	AA513389, A1597937, W21995, A1619825, AW304348, AA307643, AA247984, AW025299, A1738561, A1659244, A1611148, A1887436, A192151, and D50922.

HNEDJ03	8052	967115	1 - 448	15 - 462	AI923367, AI583218, AI73875, HP9041, AA614659, AA701656, AA455317, AI624093, AI120931, AI051123, N27564, AW131426, AA745905, H97544, N33217, AW193312, AA036731, AI811692, AI435894, AI784586, AA788753, AI348194, N47754, AI1890992, AA479068, AA601557, AI287545, AA894619, AI682609, AW058621, AW081918, AW168028, AI436563, AW168929, AI233476, AI923848, AI566456, AI186661, N22090, AA678000, AI245176, AI245198, AI272966, AI963008, AI298694, AI187073, AI510090, D62527, AI435647, AI770052, AI680189, AA812522, AI890986, AI185100, AA403052, F11075, AI350680, AI866206, AI432046, AA514269, R20526, H46858, AI566594, R27302, R69930, AI143203, AI169284, AI080704, H186242, AI280761, AI355692, AA805532, H04179, AI355703, AA687849, R67586, AI573004, AI888697, AI932870, AI355692, AA805532, H04179, AI355703, AA687849, R67586, N91144, N93493, AA757226, AI342620, R66707, AI298478, AW104101, AA50159, AI75753, AA968981, AI589126, AA381382, AA381400, AI401617, AI359209, N66889, R32649, R33334, AA381630, AW378387, AA381701, AA381636, AA904561, AA381643, AI18598, AA381945, AA381644, R52479, N89744, R75976, AI263846, N56395, AA381602, AA381460, AA654417, AI152083, AA381275, AA167390, AA476343, AW051256, W81443, AA804381, C02214, AW057830, AI805033, AI075972, AI242237, AA347509, AW378359, AA284149, F31071, AA889282, AI679723, AI679152, AW378412, AA765452, AI216644, AA427526, H27061, R31333, AA909840, AI802150, R69882, R07700, R76807, AI915452, AA381605, AW002830, AI570298, N34507, N75873, AI280767, H18597, AA632567, AA844237, W04813, and AC004520.
					AI9732, R55864, H09860, R61075, R19557, and AB032971.
					AA573510.
HNEDH59	8053	739533	1 - 515	15 - 529	AI635028, R81017, AA084609, AI923451, AI923453, AW168420, AI267269, AW088012, AI733856, AA427636, AA464739, AI953290, R44593, AA653139, AI238594, AI284640, AA704393, AI611569, AI611598, AA213959, R62710, AW188742, AA904211, AI249640, AI870453, AW270345, AI587467, AW265688, AI138329, Z83822, AC004242, AC005011, AC007066, AC005099, Z98044, AC004811, AC005412, AI049539, AC005280, AC007751, AC006441, AP000009, AI031228, AI022323, AP0000510, AI129756, AP000030, AC005209, AP001341, AI139054, Z95114, Z97184, AI031311, AP000252, AI050341, AC005509, AC005694, AC006241, AI035086, AC005778, AC005529, AI109963, AB023048, AC005548, AC005694, Z83844, AC007421, AF205588, AC007371, AC006323, AI031666, AC005839, AC002544, AC005527, AP000065, AC004673, AP000556, Z98946, AC006509, AI0121658, AP000552, AI035659, AC005632, AC004883, Y14768, AI035460, D87675, AC005231, AC004921, AC002375, AC005736, AP000331, AC005500, AC004805, AC007731, AI031284, AF196779, AP000172, AP000057, AI049795, AC005562, AC004815, AC006480, AP000125, AP000512, U85195, AI031846, AC007055, AP001136, AC004626, AI035405, AC004999, AI049761, AB023051, AC002476, AC006057, AC006511, AC006111, AC003029, AC000353,
HNEDF15	8054	946986	1 - 1267	15 - 1281	AI733856, AA427636, AA464739, AI953290, R44593, AA653139, AI238594, AI284640, AA704393, AI611569, AI611598, AA213959, R62710, AW188742, AA904211, AI249640, AI870453, AW270345, AI587467, AW265688, AI138329, Z83822, AC004242, AC005011, AC007066, AC005099, Z98044, AC004811, AC005412, AI049539, AC005280, AC007751, AC006441, AP000009, AI031228, AI022323, AP0000510, AI129756, AP000030, AC005209, AP001341, AI139054, Z95114, Z97184, AI031311, AP000252, AI050341, AC005509, AC005694, AC006241, AI035086, AC005778, AC005529, AI109963, AB023048, AC005548, AC005694, Z83844, AC007421, AF205588, AC007371, AC006323, AI031666, AC005839, AC002544, AC005527, AP000065, AC004673, AP000556, Z98946, AC006509, AI0121658, AP000552, AI035659, AC005632, AC004883, Y14768, AI035460, D87675, AC005231, AC004921, AC002375, AC005736, AP000331, AC005500, AC004805, AC007731, AI031284, AF196779, AP000172, AP000057, AI049795, AC005562, AC004815, AC006480, AP000125, AP000512, U85195, AI031846, AC007055, AP001136, AC004626, AI035405, AC004999, AI049761, AB023051, AC002476, AC006057, AC006511, AC006111, AC003029, AC000353,
HNEDD15	8055	812918	1 - 437	15 - 451	AI733856, AA427636, AA464739, AI953290, R44593, AA653139, AI238594, AI284640, AA704393, AI611569, AI611598, AA213959, R62710, AW188742, AA904211, AI249640, AI870453, AW270345, AI587467, AW265688, AI138329, Z83822, AC004242, AC005011, AC007066, AC005099, Z98044, AC004811, AC005412, AI049539, AC005280, AC007751, AC006441, AP000009, AI031228, AI022323, AP0000510, AI129756, AP000030, AC005209, AP001341, AI139054, Z95114, Z97184, AI031311, AP000252, AI050341, AC005509, AC005694, AC006241, AI035086, AC005778, AC005529, AI109963, AB023048, AC005548, AC005694, Z83844, AC007421, AF205588, AC007371, AC006323, AI031666, AC005839, AC002544, AC005527, AP000065, AC004673, AP000556, Z98946, AC006509, AI0121658, AP000552, AI035659, AC005632, AC004883, Y14768, AI035460, D87675, AC005231, AC004921, AC002375, AC005736, AP000331, AC005500, AC004805, AC007731, AI031284, AF196779, AP000172, AP000057, AI049795, AC005562, AC004815, AC006480, AP000125, AP000512, U85195, AI031846, AC007055, AP001136, AC004626, AI035405, AC004999, AI049761, AB023051, AC002476, AC006057, AC006511, AC006111, AC003029, AC000353,

HNECS71	8056	761415	1 - 351	15 - 365	AL121652, UR2668, AC005291, U95742, AC006160, Z99716, AC002365, AL096791, AE000658, AC005479, AC006449, AC006141, AC005544, AC005914, Z84476, AC005606, AC004912, AL049776, AC004966, AB001523, AC005746, M30688, AC005488, AC005907, AC004659, AC000085, AC0003982, AL009183, AC009516, AC002303, AL022336, AP000501, AC005245, AC004167, AL049830, AL023375, AL121825, AL246003, AC004706, AC005225, Z833826, AC012384, AC003070, AF111169, AL078638, AC002073, Z83381, AC004702, AL049869, Z93017, AC002468, AL049766, AL022283, AL109827, AC006312, Z83381, AC004702, AL049869, AL033249, X54486, AC005041, AC006965, AB003151, AC008039, AC007437, AC0046475, AC004526, AL133163, AL022220, AC005823, AC002425, AC004777, AC002429, AC003098, AC004841, AC005701, AC007228, AC005619, AC006285, AC004491, AL121603, Z93928, AL049631, AC005399, AC004876, AL022721, AC004929, AC005971, AL121603, Z93928, AL033527, AL031575, AC005086, AL035420, AP000696, H0904, Z68128, AL1009179, AC004967, AC003667, M63796, AC003030, U78027, AL031584, AL135783, AL022238, AC007707, Z98745, AL121653, AP000300, AC005486, AL049636, AC004033, AC004686, AC002115, AF165926, AC005740, U91326, AC005015, AL049653, AC007279, Z82178, AL109798, AC004517, AL080017, Z97053, and AC005584.
					T63576, W15491, AL149804, AL131519, AA843953, AW161793, AL092028, AA552204, AL136111, AL141347, AL185926, AA772103, AA035012, AL264527, AA620892, AA975679, AL292163, N22339, AA568942, AL698028, AW006799, N33511, N45217, AL138778, AL348018, AL184473, AL186835, AW162638, AL346238, N20265, AL121312, N32971, N22986, AL268096, AL687031, AA610500, W47402, AA738236, AL81927, AL581714, AL191389, AL007353, AL076913, AL031528, AA890278, H06229, AL815462, AL023013, AL146940, AL14446, AL523222, AA115499, AA609073, AL626917, AL285388, AA608567, AL246045, AA868240, AA508381, AA522726, N20264, AL932474, R76084, AA443103, AA460311, AL146531, F02954, AA149816, AL032190, AL368495, AA523767, R79965, AA159633, H96348, AA976176, AA782201, AW190870, AL086639, T90250, AL695863, AA715129, W52013, AA372891, AA079783, AA079671, AA804874, N91526, AA641601, AA602579, AA513828, AA115027, AA058638, Z21398, R76133, Z21400, and S82464.
HNECP28	8057	469521	1 - 535	15 - 549	T92707.
HNECN28	8058	538790	1 - 239	15 - 253	X82015, L32185, E12100, D38171, D50403, D50402, L38592, Z34916, AP005380, U70255, U55068, L13732, AA45635, AF005379, U39614, U12862, U27105, AA45644, L38593, AA45643, and S79364.
					W88808, and AC004782.
HNECH41	8059	712607	1 - 487	15 - 501	
HNECD74	8060	470015	1 - 538	15 - 552	AA468319, AW078909, AA602906, AA622801, AA468466, AL17891, AA610491, AL047427, AW202909, AL744830, AL262909, AC002045, AC006468, AL031680, AP000350, AP000113, AC007546, AL035683, AL109798, Z97053, Z94721, AP000512, AL096761, AC004425.
HNEBY64	8061	514762	1 - 754	15 - 768	



					AP000557, U91326, AF038458, AL022395, AC006111, AC006509, AL009181, AL031311, AC003950, AL024498, AP001054, AP000696, AC004973, AC006211, AL006701, AL031652, AL050338, AP001053, AC004132, AC009509, AC008372, AC004883, U47924, AC000097, AC004465, AC006120, AC002312, AC006547, AL023807, AL035072, AC004263, AC005288, AL109753, AL121658, AC005368, AC009174, AC010206, AL031281, AF196969, AC005067, AL133371, AC005823, AC005081, AC002044, AL117258, AL031602, AL022721, AF053356, U85195, AC007763, AL109758, AL031432, Z98200, AL022315, AC006453, AC005225, AL031670, AC005695, AE000658, AL049576, AL109628, AL031284, Z97054, AC002316, Z85996, AC004686, AC007226, AC004231, Z93017, AC0022517, AL022316, AC005037, AC004849, AC005089, AL049781, AP000553, AL031984, AC004983, AC004382, AC009516, AL031257, AC004491, AC005011, AL050318, AL033420, Z98742, AL121652, Z84487, AL031005, U95090, AC004884, AC005740, AC002300, AC020663, AC003663, AC004922, AC004605, AF001549, AF111168, AC006480, AC006255, AC005295, AB001523, AC002425, AC000707, U07562, Z95115, AC004706, AL031774, AC004812, AC003101, AL1049795, AL049872, AL133355, AC007842, AL080243, AC007371, AC006958, AC004460, AC005666, AC005952, AL023086, AC002073, AC006367, AF111169, AC002472, AC005839, AC006262, AC007011, AL049776, Z99128, AC007283, AC007686, AP000555, AC002492, Z82244, AC004929, AC005332, AC006571, AC004477, AC002350, Z95114, AC004805, AL031591, AC004878, AC005229, Z99495, AL021878, AL031577, AF020863, AC000025, AC005747, AC005088, U95743, AL073494, AP000550, AL024507, AC005971, AL034429, AC004032, AF067842, AC006241, Z95118, AC002985, AL020997, AL022330, AC008018, AC0060023, AF067844, and AC007225.
HNEBY10	8062	968455	1 - 490	15 - 504	AA932258,
HNEBN04	8063	927811	1 - 464	15 - 478	AA984174,
HNEBM59	8064	950732	1 - 480	15 - 494	AL121603,
HNEBM40	8065	868109	1 - 418	15 - 432	
HNEBM95	8066	529572	1 - 188	15 - 202	
HNEBH81	8067	529571	1 - 158	15 - 172	
HNEBJ67	8068	529573	1 - 113	15 - 127	
HNEBJ62	8069	861074	1 - 276	15 - 290	AI620676, AC004929, AC002996, AC005037, AP000240, AC003070, AL049779, AC006946, AC005295, and AL008718,
HNEBJ43	8070	529574	1 - 187	15 - 201	
HNEBJ31	8071	529577	1 - 321	15 - 335	
HNEBJ21	8072	529578	1 - 216	15 - 230	
HNEBB10	8073	968440	1 - 267	15 - 281	
HNEBJ09	8074	529579	1 - 158	15 - 172	AA826197, and Z99128.
					AF000556, and AF000557.

HNEB107	8075	861072	1 - 350	15 - 364	N53565, AL701080, AW263784, AL041578, AL041530, AA490097, NG4437, AW245179, AW090754, A1566408, N87410, F31619, AA348402, AA456422, A1364074, AA371642, AW408686, AW074022, A924806, AA558857, R69934, AA569065, AW104748, AW408106, AA507991, AA078255, AW373604, AA287618, AA776211, AA639025, AW383357, AA317096, AL038597, A1586878, AL780386, AA586850, AA600126, AA156484, AL135074, AA483942, T65978, AL192888, AL370650, AC007358, AL021154, AC007917, AL031985, AP000344, AC006449, AC004655, AC007384, AC005099, AL109758, AC004185, Z83822, AC005821, AL035423, AC002430, AL049569, AC006530, AC002480, AC005017, Z85986, AC004526, AP000689, AP000509, AC005529, AL031778, AJ251973, Z94056, AB003151, AF003626, AL049589, AC006948, Z84480, AC002477, AC003977, AL031651, Z84469, AC002988, AC005255, AC002549, AC012627, AC002558, AC005164, AJ003147, U64453, AF124523, D84394, AC002070, U91322, AC003030, AC006511, AC004106, AC004491, AC005777, Z98750, AL031290, AF195638, U80017, AC004019, AC005913, AC006241, AL109984, AC005800, AF053356, AC007538, AC007055, AC002312, AP000240, AP000557, AC005971, AF111169, AL109798, AC005200, AL022323, AC004854, AC005535, Z82244, AC005725, AP000558, AC002350, AC006388, AC003692, AC007993, AC004929, AL117330, AC004834, AC004531, AP000553, Z82214, AC002094, AC003982, AL049780, AC006441, AC007225, AC007536, AP000555, Z46773, U47924, U96409, AC005747, AC005053, AL121652, AL009181, AL049839, AL133371, AC009516, Z83840, AC006487, AC007546, AC006515, AC005858, AC005841, AC004905, AC004814, AC007090, Z93023, AC004832, AL022476, AL096701, AC005102, AC004583, AC005332, AP000275, AC006132, AL078638, AB000882, AL022238, AL133448, AL096791, AC003684, AC005751, AF091512, AC008012, AC005914, Z93020, AC006064, AL035089, AL050332, Z98036, AC004231, AP000105, AP000037, AP000503, AC004638, AC005363, AP000690, AL008721, Z97183, AC002416, AP000959, AC006251, AL008583, Z98256, AC002310, AL023575, AL121754, AC003663, AL049834, AC016027, AL121653, AC005089, AC006130, AC016830, AC004253, AL021366, AF205588, Z68226, AC006539, AL049697, AC005722, AC007344, Z97876, AP000114, AP000156, AC002526, AC004882, AC006480, AL049745, AL031774, AL122023, AL096678, Z68756, AF134726, AC005095, AC004477, AC008273, AP000025, AL049776, AC005820, AC003041, AL031575, AL009183, and AL078632.
HNEBF27	8076	684467	1 - 255	15 - 269	AA340904, AC002430, and AC007384.
HNEBF20	8077	529643	1 - 66	15 - 80	AL198252, AL054850, AL743793, AL807633, AL1537343, and AL1208171.
HNEAQ86	8078	575534	1 - 288	15 - 302	F30650, AL1567391, T05684, F30586, F35689, F16848, AA507814, AA570441, AA515728, AL007744, AW149389, AA654482, R74433, T17332, AL869797, AA947369, AA340737, AA229159, AL121287, AL689198, R89560, AA610381, AA598736, AL037632, AL246996, AA338770, T39217, AL226532, AA527109, AW328202, R34070, AW150387, F30158, AA985197, AC002544, AL096791, U91326, AC005231, Z82215, AL022327, AC006312,

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HNEAQ37	8079	507280	1 - 330	15 - 344	
HNEAN10	8080	968468	1 - 395	15 - 409	H00730, and H00813.
HNEAK47	8081	529646	1 - 251	15 - 265	
HNEAF71	8082	761414	1 - 473	15 - 487	H41860, AA321412, AA936323, and AA213692.
HNEAA59	8083	738531	1 - 511	15 - 525	W81648, W81649, AF754581, AW374534, A1902340, A1902342, and AF086458.
HMWJD93	8084	849419	1 - 478	15 - 492	H75348, AW406166, AL122621, H40371, H75349, AL318176, AL638837, AA315764, AL189304, AA093383, AL335256, AN723497, AL344272, AL598250, AL192481, ALW24231, AL140369, AW406665, H60725, AA330135, W68219, R91106, AA004461, AA676608, AL219489,

HNWJZ55	8085	731809	1 - 210	15 - 224	AA923666, AW269704, AL380114, AA4993867, AL199822, H60720, AA631326, AL345131, AL802852, AL538962, AL538961, AA379911, AA352708, R79296, AA884789, H89631, H60719, AA330579, N88180, R91107, AW265718, H93720, AA366593, AA356557, R93706, AA614457, R97076, N57296, AW235202, AL799430, AL777983, AW294660, H60726, AA353277, H40318, N84253, R86943, AL655330, AL538668, AL910143, AL538747, H89485, N29873, AA330343, AA954784, AA860746, AL538678, AA912635, T28263, and D14657.
HNWJX77	8086	973813	1 - 634	15 - 648	AW301879, AW408709, N27559, AA856945, R20715, H71238, AC006017, AL049712, AC005837, AC016027, AC016830, Z85986, AC004605, AC005618, AC006277, AP000355, AC004890, AC004560, AL031666, AC005520, AC007845, AL034423, AL009181, AC004985, AL031728, AL031295, AC004036, AC007955, AC006512, U93305, AC005102, Z79997, AP000512, AB023049, AC016026, AL021878, AL049832, AF024533, and AL078611.
HNWJX77	8086	973813	1 - 634	15 - 648	D58283, D80043, D50979, D59467, C14389, D80188, D80195, D80227, D80164, D59275, D59502, AA305578, D80391, D80253, D59787, AA514188, D57483, D59859, D80022, C14331, D80166, D51423, D59619, D80210, D51799, D80240, C15076, D80196, D80269, D81030, D80038, D81026, D80212, D80193, D80219, D80366, D59927, D80378, D59610, D80522, AA305409, D51022, D59889, D50995, D80045, D80024, D80248, AW177440, D80241, C75259, AW360811, T03269, AA514186, C14429, D80251, AW178893, D51060, C14014, D80133, AW375405, AW179328, D80247, D80439, AW366296, AW378532, AW377671, AW360844, D80268, AW360817, AW375406, AW378534, AW179332, AW377672, AW179023, AW178905, AW177731, AW177501, AW177511, D58253, C05695, D80302, D80132, AW178762, D51103, AW179020, D51250, AW352171, D80134, D52291, AW377676, AW178906, AW352170, AW178907, AW178908, AW179019, AW179024, AW178775, AW369651, D80157, AW177505, AW177722, AW352158, AW360841, AW352117, D59373, AW178909, AW177456, D51759, AW179004, AW176467, AW179329, AW178980, T11417, AW177733, AW378528, AW178754, AW179018, D59695, F13647, AW179009, AW179012, AW178914, AW178911, AW378525, C06015, AA809122, T48593, D80168, AL910186, AW367967, C14227, D58246, AW178983, AW177728, AW178774, D81111, AW378543, AW360834, AL905856, AW352163, D59653, C14298, D80064, C14407, D45260, D59503, AW178781, AW177723, AW352120, AW367950, AW178986, AW378540, H67854, C03092, H67866, AL525923, D59627, D59317, D58101, Z21582, D59474, T03116, AL525227, D80238, C14957, D60010, AW177734, AL525917, AL525242, AL525920, AA514184, D60214, T03048, AL557751, C14046, AL525912, D51213, D59551, D52273, C16955, AL525925, AA285331, AW378542, AW378539, AL525237, Z33452, D50981, C05763, T02974, AL525222, AW360855, D31458, T02868, H67858, C04682, AL525928, C13958, D51053, Z30160, AL525228, N66429, D80314, AL132110, AB028859, AF058696, AR008278, A84916, A62300, A62298, AR018138, Y12724, D26022, A82595, X67155, Y17188, A25909, A67220, D89785, A78862, D34614, AB002449, AR060385, D88547, AR016808,

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HMWIX37	8087	708676	1 - 363	15 - 377	A1283313, A4910680, W70158, AW387836, W70197, R69239, AW387883, AW387786, AW387795, AW387782, AW387778, AW387775, R77897, AW020592, A1557808, AW020397, AW020710, AW021717, AW019988, AW020425, AW021178, AW023351, AW023955, W48671, AA099519, AW020629, AW023863, AW020480, A1687134, A1525653, AW022299, AC010202, AC005365, AC004686, AL021393, AR050959, X60769, and AC002480.
HMWIS12	8088	970753	1 - 1087	15 - 1101	A1684734, AW134873, AA912105, A1808963, AA905108, AA764759, AB11204, AW268977, AW405428, and AW086137.
HMWITQ64	8089	842657	1 - 1650	15 - 1664	H51069, H93820, H93316, H51070, AL048969, AA603421, AA533216, AA679794, N57681, AL21818, AW714110, A1859438, AW410354, AL380617, A129746, AW419389, AA714011, AW407632, AW021161, A1884383, AA489240, AA601230, AW022934, AW151247, A1523074, AA604831, AW341978, AL291439, A1537995, A1536858, A1130709, A1709307, AW131356, T74524, AA678950, AW272640, A1814682, A1466623, A1735609, A1120959, AA558404, AL042906, AL340151, AA829044, AC002126, AC004491, AC005081, AL096791, AC006449, AC005632, AL031670, AC004859, U91326, AC002365, A1109865, AC005015, AC005332, AC007731, AC005500, AF196969, AC005399, AC006211, AC006121, L78833, AC005225, AC003982, AC005527, U47924, AF129756, AC004983, AL031680, AL049779, AL049540, AL121603, AC005088, AL109627, Z98941, AC006312, AC002316, AC002425, AC005529, AL139054, AC004991, AC005736, AC005519, AP000512, AL035072, AL031846, AF001548, Z98946, AF001550, AC005531, AC005746, AC002477, AL031230, AL031311, AL024498, AF111168, AC003101, AC005911, AC005011, AC003684, AC002544, AC006441, AC006111, AC004019, AC002301, AC005488, AL031673, AC004841, AC002303, AC005409, AC005207, AC006480, Z83840, AC002429, AC005484, AL133245, AJ011930, AF109907, AL031133, AF047825, AC007880, AL13246, AC005520, AP000557, AC007686, AC004253, AL049776, AL031662, Z83846, AC007371, A1096701, AC005288, AC009516, AC003043, AL080243, AC002565, AC005089, AF001549, AL021391, AC003029, AC002470, AC004033, AC002073, AP000134, AP000212, AC005839, AC007637, AC004659, AC006538, AF124726, AC004584, AC000353, AC000052, AC005695, Z98884, AC005231, AC004821, AC004000, AL121658, AC003109, AP000039, AL133163, AC004797, AL031283, AC007263, AC007536, AF001552, AC005368, Z99716, AL050318, AC005940, U91323, AC005280, AP000248, AP000558, AL031282, AC002543, AC0012384, AC004139, AC009247, AC016025, AL035659, AC005913, AC005971, AP000514, AC002302, AC002350, AC002347, AC004477, AC005599,

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HMW1Q44	8090	716509	1 - 625	15 - 639	AA160427, AB12401, AA228442, AW272815, AA972523, AA484892, AA728911, AA449923, AL733856, AL860535, T74524, AW019964, AA502980, AL049643, AA653291, AA904211, AW270385, AL864500, AL041375, F23327, AA593537, AA485402, AA757758, AL537995, AL536838, AL130709, AA515351, AL142231, AA577985, AL989408, AA502977, AL434311, AL690379, AW237905, AW265688, AA827383, AA298365, AL791659, AW169038, AL139054, AC003029, AC006111, AC007216, AC006211, Z84480, AC005102, AC005519, AC004883, Z95114, U95742, AC007227, AC006312, AC005086, AL109798, AC005484, AC005412, AL008582, AC005229, L39891, AC005730, AP000355, AC005722, AL031728, AL009183, AC004230, AL022320, AL121603, AC002996, AC004583, AL022316, AP000090, AL109963, AC005372, AC004106, Z83840, AC007690, AC009247, AC005914, U78027, AC005933, AL109628, AF053356, AL035420, AC007240, AL022476, AL050318, AL031255, AC003101, AC006449, AC006064, AP000704, AC004000, AP000044, AP000112, AC000025, AC003839, AC002063, AF207550, AC005696, AC004966, AC004019, AC002128, AC005031, AL031447, AC005971, AL031311, AC005071, AC004819, AL021393, AC004876, AL023575, AL035422, AP000067, AC004975, AL096701, AC005776, AC004253, AC003109, AL079340, AL035423, AC004859, AC005057, AP000689, U96629, AC005488, AC004813, AC007225, AC005368, Z89946, AC006317, U635721, AP000557, Z97056, AP000008, AC006511, AP000555, AC004963, Z93930, Z84469, AC005399, AC006285, AC004967, AC005670, AC004821, AC006539, AC002350, AC004851, AC005015, AC005261, AC005837, AC004955, AC005899, AC004884, AL035681, Z98044, AC004491, AC004263, AF190465, U80017, AC005081, AL121825, AL031681, AC005225, AL020997, AF196779, AC002310, AL034420, AL049569, AF134726, AC002040, AC002477, AL121652, AL031767, AC007308, AC006077, AC007226, D87675, AF001552, AC004383, U47924, AC007066, AC000353, AC007686, AC009516,
HMW1Q15	8091	956253	1 - 360	15 - 374	
HMW1M05	8092	861094	1 - 567	15 - 581	

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HMWIL08	8093	959512	1 - 708	15 - 722	AL1377192, AL184080, AA450266, AW026835, W65480, AL869635, H92183, H14198, AA974576, RS8922, R90834, H97357, and AA351111.
HMWIK10	8094	964701	1 - 611	15 - 625	AA776466, AL047184, AT742757, AT750964, AA865422, AW005649, AT750965, AB969031, AT741029, AW139279, AA338882, AL445299, AW341808, AB032959, and AL021393.
HMWIG75	8095	767332	1 - 318	15 - 332	AW193265, AW408717, AL613280, AL350211, AL281881, AL270117, N33150, AL046409, AA623002, AL860013, AA828704, AL284640, AL334443, AL431303, F36273, AL358571, AA490183, AL119691, AA482711, AT799642, AA587604, AW083402, AA613203, AA834707, AW261871, AL038705, AW438643, AA577906, AW083364, AW497027, AL044940, AW276827, AL037683, AA806796, AA722372, AA720702, AA551503, AA493471, AA613232, AL370074, AL041690, AW338086, AL370094, AA862173, AL133164, AA535661, AL570261, AL457397, AL375710, AA503947, AT744995, AL688846, AA584167, AL053672, AW274346, AA599920, AW193432, AL814735, AL71481, AL286356, AA631507, AA723017, AL634384, AL744188, AL038785, AA366429, AT719805, AW020141, AL696962, AL376100, AL921649, AA630925, AA491814, AW406447, W79504, AA134367, AL537955, AA213741, AA649642, AL281697, AL499938, AL68745, AA525824, AA664015, AL076616, AA362349, M86143, AL956124, W05405, AL559705, AA219129, AA661921, H71429, AT798473, AL060436, AA501600, N66026, AA368936, AL126777, AA350859, AA594725, AA601388, AA984708, AL963720, N27763, AL164251, AA469451, AL370878, AW148792, AA244337, AL017024, AL138455, AL040921, AL002834, AL043009, Y18431, X95097, AF077058, X55932, AF015167, D83989, U57005, AF015147, X55925, U18391, U18394, U18392, X54179, X93972, U55926, U57009, X54180, U18395, U18393, U51097, AF015157, U12582, X55927, U67801, X57006, X53550, X54175, X54178, U18398, X75335, U57008, U67832, X55924, U18387, X54176, AF015166, U67831, X55931, S75201, U18390, U04355, L47228, Z22650, AF015156, X55923, L55351, U67829, AL033543, U67827, AF015151, X55929, AF015149, U62356, X55930,

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HMWIG26	8096	861091	1 - 354	15 - 368	R91765, H80580, AL127315, and W69323.
HMWIG17	8097	663972	1 - 473	15 - 487	W92749, AL135553, AA723171, AA971474, AA716724, AA723148, AL129477, AA722631, AA126701, AA759279, AL128243, AA054734, AW130619, AL342776, AA521028, AA758558, H30397, AL127173, AW007796, AA814686, AL458733, AL911961, AL356318, AL692581, RS0475, AL1992039, AA885885, AL335606, AA448808, AL243873, AL692581, AL018349, AA746499, AA831847, R69848, AA045310, AL279451, AL540785, W84621, AA648741, AL686115, R23217, AL652242, AL277449, AA983572, AL199899, AA977601, AA434264, AL284514, AL356077, H30405, AL061132, AL148418, AW300520, AA040698, AL069976, AW083124, AL160129, AL624072, AL536950, AL093214, AL089947, AW170119, AA811443, AA936383, AL142495, AW006134, AA447432, AA401210, AL831954, AA383372, AL371031, AA555078, AL189568, AL830792, AA043162, R69469, AL401693, AL738759, AL910399, AL188058, AW090281, AA641027, Y17454, AL159025, and AB030835.
HMWIG01	8099	913689	1 - 147	15 - 161	T92652.
HMWID28	8100	419821	1 - 585	15 - 599	



HMWIA19	8101	928488	1 - 256	15 - 270	
HMWHZ43	8102	861097	1 - 364	15 - 378	AA872717.
HMWHW8	8103	779903	1 - 277	15 - 291	H71976, and AC004128.
2					
HMWHV36	8104	708099	1 - 364	15 - 378	T82833, and AW404502.
HMWHV12	8105	970742	1 - 408	15 - 422	W69602.
HMWHP86	8106	785510	1 - 305	15 - 319	AI952414, AI821854, AA594979, AI821710, AI253514, R06129, AI735011, and AA641406.
HMWHID94	8107	794306	1 - 214	15 - 228	AA158392, AA226584, AA484143, AI002734, ZP298246, AI241835, AA311194, AA640704, AW075845, AC005480, AC004955, AP000512, AL049759, AC005221, AP000359, AC002350, AC016025, AC006480, AF064861, AL035072, AC004765, AI003147, AC003029, AC002375, AC004805, AC005037, AC004883, AC004921, AL005755, AC006285, AC005803, AC005484, AC006538, AC006065, AL050348, AC008126, AL137191, AL022326, AL049780, AC005980, AL096791, AL031432, AC006166, Z84480, AC002420, AC005971, AC007695, AB023051, AC002115, AL049871, AF196969, AF091512, AC004865, AL078614, AC007738, AF195658, AC006530, AF067844, AC004821, AC007537, AL031602, AC003982, AC004701, AL023494, AC007360, AC002425, AP000114, AP000046, AL132994, AC007639, AC002351, AB020865, AP000269, AC008134, AC005746, AC005519, AL121652, AL031281, AC005887, AC005921, U75636, AL031255, AL132987, AL096701, AC004000, AC006064, AP000032, AP000035, AC005291, AC007387, AL035458, AB023049, AC005520, AL022313, AC019014, AC004890, AC006344, AC006387, AC005690, AP000103, AL035086, AC006251, AC005409, AL034417, AC002565, AC005768, AP000556, AC008101, AP000260, AC004682, AL035413, AC004796, AC006449, AL035587, AC007688, AC006138, L44140, AC006522, Z83851, AC004019, AC006039, AL022345, AC004596, AC006312, Z69838, Z84484, AC005091, Z93017, AF053356, AC004854, AC007193, AP000208, AP000130, AP000099, AC002470, AC004963, AL132777, AL021391, AP000247, AP000344, and AC005922.
HMWHB71	8108	565104	1 - 1244	15 - 1258	AI707744, AL120282, AI688963, AL046225, AL045756, AI268019, AC006942, AC002365, AC006430, AL034555, AC007686, AC004816, AC005231, AL080243, AC002425, AC006111, U07562, AL035455, AC004491, AL133163, AC004832, AC004922, AC003101, AC009516, U95740, AL020997, AL021546, AC005740, AL031255, AL031283, AC006126, AC002551, AC007216, AF196779, Z83732, Z85986, AL079342, AL035420, AP000553, AC004967, AC005015, AL024507, AL020995, AC005736, AC004257, AC004067, AL031228, AC002288, AC004887, Z94044, AL022322, AC012384, Z97054, Z83822, AP000030, AC006285, AF025588, AF111168, L78810, AC016025, AL133245, AC006001, AC005291, U95742, AL096701, AL049749, AC000052, and AC007934.
HMWGW7	8109	646280	1 - 652	15 - 666	H29797, H08896, and H70302.
9					
HMWQ48	8110	861114	1 - 633	15 - 647	AA878492, AC005907, AC005089, L78810, AL031311, AL096791, AC007055, AP000359,

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HMWGI79	8111	774806	1 - 688	15 - 702

					AC007226, AC006509, AC005701, AL132712, AC007546, AC002477, AL049780, AC005632, AC005921, AC005821, AC006251, AC006277, AC005387, AC006538, AC002347, AC006317, AC009516, AF037338, Z98742, AL031848, AC003688, AC005520, AC004841, AC004386, AC005037, AC008171, AC005363, AC004858, AC004216, AC005377, AL133448, AP00130, AP000208, AC004854, AL022316, AC005544, AP000505, AL2828, AC005500, AC002527, AL031255, AL008718, Z85987, AC002115, AC005015, AC004859, AF053356, AC004526, AP000692, AF200465, AC004985, AL031591, Z93017, AC002350, AC002985, AC007225, U85195, Y10196, AC002314, Y14768, Z93023, AL031670, AC007336, AC005971, AC004659, AC006023, AL033381, AL096701, AC005666, AC005484, and AL096703.
HMWGH30	8112	455037	1 - 288	15 - 302	AA928968, AI143152, AW296605, AF064858, and AL121757.
HMWGH06	8113	935593	1 - 332	15 - 346	R34758, and AA642317.
HMWYF93	8114	506636	1 - 444	15 - 458	L81392, AC004749, and L81391.
HMWFN80	8115	573608	1 - 334	15 - 348	AL003358, AA453553, and AP001061.
HMWFN37	8116	861123	1 - 452	15 - 466	Z60346.
HMWFN32	8117	573603	1 - 295	15 - 309	R89320.
HMWFH18	8118	666681	1 - 334	15 - 348	RI0175, AW401608, AW403120, AC004233, AF014118, and AR0031664.
HMWFG88	8119	592078	1 - 588	15 - 602	AA730422, AA574448, W01639, AA890425, AL053458, AW303008, AL123396, AA716211, AA702098, AL524453, AA446923, AA368616, AA077285, AA832077, AL142231, AA483108, AW378752, H56003, H42968, AL888419, AC005412, AL021877, AC005372, AC005254, AC005531, Z98304, L78810, Z84469, AL133445, AC003355, AC002988, AF165141, AC002558, Z76735, AL133500, AC004593, AL033527, AL034351, AC005566, AC005255, AC006581, AL049636, AL109798, AC005852, AL008582, AC007201, AC005736, AC004933, AF061032, AC000117, AC004993, AL121754, AC011394, AL035691, AC006277, AP000552, AC004382, AC006985, AC004918, AL049743, AC002344, AC004542, AC007279, AL022336, AP000691, L34160, U20499, AL008637, AC005666, Z82184, AC005969, AL021939, AC000061, AC004813, AF030453, AC006014, AC005088, and AC004674.
HMWFD86	8120	785629	1 - 400	15 - 414	AI284640, AL370074, AA469451, AL334443, AA720702, AL370094, AW303196, AW193265, AI312309, AA490103, AW085780, AW301350, AW274349, AL281881, AL350211, AA521399, AA521323, AW103758, AA984708, AL962050, AL613280, AL281903, AW261871, AW267293, AW407578, AW406447, AL610159, AW327868, AL138455, AL138265, AL801591, AA587604, AL732865, AA613227, AL567076, AW419262, AL619997, AL780515, AL048925, AL053672, AW238278, AW340844, AA491814, AL688846, AL375710, AL119691, AW4386643, AW193432, AA177061, AI341664, AL379719, AA135842, N71728, AA468131, AI345654, AI471481, AL048626, AL754658, AA665330, AL799642, AL305547, AA947547, AW338086, AL744995, AL801701, AL718446, AW406162, AA177063, AL249997, AA577906, AL246119, AA747276,
HMWFC64	8122	573596	1 - 311	15 - 325	

				AI307608, AW270382, AA523843, AA649642, AA630925, AL042420, AL499938, AA610491, AA846935, AE564496, AI298710, W79504, AA502103, AL017415, AI289067, AI246796, F34498, AI345518, AI338501, AI798265, AI674873, AI733755, AI685198, AI537955, AI370707, AI475569, AW406659, AI3038705, AW376931, AI473943, AW269488, AW072587, AI371070, AI475569, AA448231, AA452563, AA623002, AA613345, AA599920, AL121235, AI919029, AA737318, AA581903, AW088058, AI110770, AE57506, AA055169, AI640702, AI649968, AW270270, AA551503, AA846957, AA678499, AI821271, AL682912, AI254316, AA744341, AI471572, AA491882, AI061227, AI679672, AA316905, R77905, AW103509, AI956037, AI357288, R88888, AA584082, AA493708, AA977743, AI245679, AA594145, AI709365, AA837677, AA661948, AA598997, AW085991, AI860020, AC006115, X54181, X54178, AC005529, UI8391, UI8394, I51997, UI8393, U57009, UI8395, X55925, X55926, X55927, X54176, AF077058, U57005, UI8392, X55923, UI8398, AF010317, AF000555, X54179, AC004882, UI8399, AF015147, AF015157, U57006, X53550, X75335, S75201, UI8387, U57008, X18000, Z94801, AF015149, AC006958, AC004159, L78833, UI8390, AC005007, X55932, AC006367, U95740, AF121781, Z99716, AL121655, AC005015, AL034420, AF015148, X76629, AL022323, AL080243, U57007, AL132800, AL132777, AC006486, AC005081, AC005235, AC005412, AF015150, M87919, AC002564, AP000497, U04355, AC005183, AL035423, UI4701, AF045448, X55930, AL133396, AC004099, UI8400, U67828, AC006480, U78027, Z85995, AC004531, M37547, Z95329, AC004028, AC007242, AF200465, U67231, AL035681, AC012384, AL031659, AC005274, AF079295, AC007055, X88791, AC006116, AP000014, AL132712, AC005971, AC002470, AF064861, AC006277, AC005215, AL078604, AC003101, Z49816, AC005565, AC009516, AC005940, AL034419, AC007666, AB020866, U67831, L81648, X03272, AC007227, AL049766, AC002094, U67827, AL022098, AC008012, AL031228, AL031286, Z81369, AL024507, AC005088, AC005531, AC005004, AL080238, AC006285, AP004477, U62293, U67211, AC006582, AL049872, AC004149, Z98744, Z96074, AC003043, AL031681, AL121653, Z84814, AC007308, AC005071, AC005911, AL035460, S77605, U67233, AL022311, AL121653, AC005037, AL008719, AC005527, U04369, AC004583, AF141309, AC004890, AC002996, AC005184, AC002456, AC000205, AC016026, AL121603, AP001172, AC006205, AC004816, AC007065, AC005778, AC005844, AC002077, AC000070, AL049647, AL035425, Z81308, X55928, AC007681, AC007919, AL133289, AC005783, AC011311, AC005288, X06123, Z86090, AC005242, AL022476, AC004386, AC006042, AC005383, AL008728, AP001037, U67221, Y09781, AC008079, Z86061, AC009227, AL031589, AC007099, AF126531, AL035079, AC004643, AF207550, AC005923, AC005670, AF015153, AC007043, U35114, AC007073, AF010238, and AC004966.
HMWET56	8123	812712	1 - 246	AA947547, F26152, AA502103, AA450199, N43757, AW192154, AL049634, AA3605347, AI921649, AA593060, M86058, N70648, AI434706, AA513999, AI358343, AI376100, N71557,

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					AA563770, AA328169, AA679266, AC006511, Z82097, AC005940, AL008635, AB007915, AP000300, AP000113, AP000045, AC004832, AC001662, AL031774, AC002542, AC005164, Z82181, AC062777, AB011542, AC004996, AL050309, AL031058, AC01362, AL117328, AP000503, AF034726, AL035659, AL035420, AC005399, Z49250, AC010582, AC004460, L48038, D83253, AL031589, AC006148, AC000026, AC002059, AC006142, D84149, AC003041, AC005368, AC005823, AL034394, AC007688, AL049780, AC006142, D84149, AC003041, AC004755, AC005694, AC005837, AC005529, AC012599, AB011129, AC004771, AL080243, AC004755, AC005694, AC005837, AC003077, AP000210, AP000132, AL049759, AP000248, AL031230, AC005081, AP000474, AC003077, AP000210, AP000132, AL049759, AP000248, AC005525, AL096818, AC004498, AL006216, AP000542, AC004019, AF069074, and AC005391.
HMWCG38	8139	851630	1 - 598	15 - 612	N58418, AC034138, W74493, AW006009, AA015719, AF780267, AL445745, AL056261, W79090, AA0400216, N78008, AP037396, AP019181, W73497, W23486, W67606, AF64573, AL74806, AA293838, AD097007, T95431, AA603085, AW295073, AA121781, AL122613, N26542, H84552, N39425, H55969, AL697129, T78468, AL090556, AA564396, AA748523, AL268509, N64022, AL168016, AL080325, AA033402, N48541, AA694390, AA651930, AA400127, W67558, AL268614, AL369805, AA450021, W69403, AL261755, W73515, T78545, N95084, AA618523, AA772633, R10577, AA327219, AA211289, AA302701, AA705259, R19400, AL24654, N73360, AA280628, R11610, AA846680, AW265361, R10576, AW023512, AL000971, C15592, R57045, AL085385, AA767586, AA830670, AA843900, AL817930, AA648329, AL143166, AA625706, AW385518, AA744945, AA383319, N898665, AL219903, AA403263, AA890669, N28373, AL091949, AL458483, AL299215, AA865342, AL052655, AA227192, N90503, AL041241, AA890424, AA056457, AL865626, AW265454, N53860, AL708757, H55970, AL547137, AL541216, AL535787, and AL132931.
HMWBZ89	8140	787111	1 - 357	15 - 371	H49239.
HMWB159	8141	893995	1 - 274	15 - 288	AA368664, AL043880, R62399, AA523876, AL015189, W05294, AA423981, AW339362, AL056132, AL873659, AL636417, AL812097, AL274942, AL349372, AA922395, AL168791, AW083986, AL266219, AL859189, AW194157, AL683304, AL199896, AL269181, AL167551, AL199890, AW130160, AL128362, AL338926, AL288535, AL339682, AL114897, AD091057, AL671452, W90768, AA810411, AA114896, AA137033, AA528033, AL4743815, AW005102, AA523117, H48227, AL886641, R38443, F05074, AL1680503, AA938005, AL862000, AW204921, R62400, AL305176, W90701, AL990810, F08811, H79690, AL023431, F04534, and T05279.
HMWB075	8142	932558	1 - 461	15 - 475	N20587, AA225583, AL391633, N28979, AL620540, AL601267, H24714, T49309, AA225604, AA987298, U73643, AL136842, S57796, and AL16226.
HMWB177	8143	888862	1 - 533	15 - 547	T80378.
HMWB140	8144	712730	1 - 603	15 - 617	T74339, AA007592, W90626, AA680304, AA954254, AL133697, W60511, AA007389,
HMWBH29	8145	927321	1 - 625	15 - 639	AA767198, AA143074, AA987383, AA313708, F12509, Z44513, W90249, AA827641, AL141189, AA401334, AA747585, F25999, AA575866, AA313726, F22587, AL730678, AA664969, F33617,

					AA315506, AB58423, AA515848, N98867, F19304, F37060, AA156103, F37437, W58769, F33656, AA157759, AA608827, F25212, F24956, AA740468, F36060, AA737291, AA492193, AA932208, AA090406, A1291661, AA705812, AA889507, F24362, AA194558, F31772, AA148433, F27422, AA741404, AA308290, A1536594, A1276978, AA314904, AA384045, A1143021, AA382505, AA526390, F29957, AA314719, AA974467, F182675, F27860, F32057, F31800, AA995725, A1282169, A1933136, F24856, AW022412, F34156, AA491525, AA192185, AA579682, AA594575, F19218, F22463, A1749039, T37562, A1810403, F20992, T35918, F29662, F21312, F29723, F23580, F35367, F31884, AA385186, A1867973, F31246, F20491, AA143134, F24202, AW368325, A1701341, F29466, W88582, A976781, AW241684, F37748, F29835, AA492088, F30675, F27384, N56568, F35170, F27612, T57445, F23553, F34612, W04663, T23491, Z40911, T16443, AA528421, F34150, F29578, AA639064, N89217, F31547, N56464, F34856, F33998, F24124, AA247353, AA316521, and AB017710.
HMWBG16	8146	859404	1 - 200	15 - 214	AA39806, and A1650862.
HMWB42	8147	714114	1 - 484	15 - 498	R11451, and AA018329.
HMWAJ04	8148	586507	1 - 740	15 - 754	AA558616, AA578017, AA558697, AA578251, A1053465, D29241, AA649705, AA595825, AA810370, AA127636, AA713922, AA523815, AA304977, AA346575, AA834755, AA970213, AA451990, AA527970, AA341336, AA336362, AA574110, AA649722, AA483731, AA973803, AA515435, AA719080, AA078691, AA644207, AA446657, AA524838, AA559290, A1446638, N52544, AA077817, AA259186, AA161083, AA484670, T49241, A1205126, T16056, A1046457, AA487858, AA280632, R83443, AA461233, AA804379, AA720691, AA670468, AA503473, AA634145, AA847984, W56203, A135238, R29012, AA678772, AA602528, AA876314, AA626747, AA513972, R95704, AA134959, AW083402, AA582911, AA480790, AA663486, AA522942, T15897, AA384751, AA873560, A1890918, R97634, AA605032, AA721615, AA996214, W05364, AA215474, AA845843, AA988259, A1471481, AA721981, AA525263, T10560, AA578349, T03722, AA437161, AA233519, A1037914, AA910125, AA078537, AA450089, A1041499, C14793, AA678443, AA559305, A1284640, T36219, H04778, T08438, AA678499, AA308806, N55273, H10994, AA330380, AA613421, AA350859, AA826793, AA209164, F19258, AA644531, T86755, AA196796, AA838096, AA525824, AA325699, R38154, AA384622, T54108, AA630606, AA780797, AA516527, AA486885, AA491284, AA102006, AA358321, AA703707, AA525876, N46153, AA194761, W80462, AA525249, F23249, AA551201, AA806796, AA323749, AA788858, AA527958, AA825455, AA665021, AA521355, AA533092, AA586562, AA167043, AW167207, M177899, T94075, F36273, AA492166, AA134347, AA206935, AA059472, F36569, A1567577, AA578141, AA525151, AA527113, F01658, F01141, AA552885, AA550758, AW236342, AA601222, AA837718, A1023082, AA593359, AA095511, A1648558, AA810269, AA357552, AA714055, AA491437, AA429091, T71030, AA650271, N69316, AA749274, AW088058, F10081, F29989, AA523020, AA302963,



				AA663469, T41050, AA515909, D57369, AA012897, AL055672, AL0529245, AL110770, AA579736, AA401657, AA365302, AA530213, AA524809, AA326441, AL048925, AA357937, T58344, AL887483, AA640034, AA53036, W38404, M87918, AF205592, AL132985, AC005562, AL049709, AP000302, AP000114, AP000046, S83362, U14694, AC006004, AF109907, X07258, U02048, AC004838, AC003086, AL121652, M94631, AC007193, AB012251, AC005730, I44140, AF193806, AC006163, U14702, U14689, AC003661, AC002115, AB023049, AC002350, AC004111, AC006241, U02044, AB023048, AC006409, X54156, U94788, AC005595, X62695, AP000510, AC010200, AC004534, AL121595, AC006613, U13056, AP000512, D49685, AL030752, AC006530, AF147275, AC004987, AC005771, AL031123, AC003663, X60152, AC004449, AC006533, Z73900, AC004810, AL022238, AC006596, X75335, AL109654, AL031732, AL034419, AD000092, AP000011, U47924, U58675, X58156, AL031687, AL031679, AC004596, AF029730, U14691, U14685, U14686, U14687, U14688, U14699, U14710, S41998, AC007358, AC002429, AC005912, Z99128, AL132777, Z84480, D37794, AF077058, AC007021, AC006928, AF053645, AF085444, AL031599, AC005901, AC002525, U147703, M87919, AL035450, AL035685, AC006137, AC005291, D83989, AL133404, AL035530, AC007314, AL021392, AP000513, AC007790, AC004167, AC005399, U14704, AC007066, Z84486, AC004234, AL078639, Z22650, AP000153, AL021546, U52513, AL132712, AL049761, AC007207, AP000455, U73633, AL133485, AL035448, AL031735, A26236, L04965, L77570, AC006948, AC006050, AC005754, Z99570, AC004615, AF011889, AL133238, AL049611, AC005566, AC005503, AL035681, AC000372, AC002106, AL080242, AC004408, AP000402, U95743, AC006362, AC007011, AB023052, AC002457, AC000087, AL023883, AL022329, I17291, AC005037, M77848, Z82208, AF147277, X83604, AL031653, AF060568, AC006138, AL121580, AC005610, AF038458, Z73420, U14692, AL031668, S61977, AC005895, AC001226, AL136018, AL078604, AC004031, AF130342, Z97205, AL022325, AC005600, AL008706, AL031983, U55180, AL049869, AL023577, AC004955, AF134726, AP000502, AL035086, Y12508, U14695, U14705, AL133224, L13709, L13713, AC003111, L13714, L13706, S75537, M87903, AL031283, AC004216, M77849, AC004825, AC005317, AC004477, AL079340, AF064861, AC005940, AC005060, AP000018, AC005191, AB011147, AF006752, U91319, AC002539, AC006277, AB020860, AP002537, Z69917, AC003102, L49046, AL031672, AC005221, AC007860, AF015170, AC004263, AL117258, AL246003, AL031588, AC004760, AC006441, X55931, U95739, AL032822, Z82170, AC000119, AL049860, AC005200, and AL034429.
HMVDZ11	8149	966351	1 - 530	15 - 544
HMVDV55	8150	811616	1 - 397	15 - 411
HMVDQ02	8151	919057	1 - 342	15 - 356
HMVDL45	8152	717384	1 - 827	15 - 841
HMVDI60	8153	877124	1 - 774	15 - 788

					AI657127, AW002540, AI660025, AI623109, AI381671, AIW150855, AW206029, AW205466, AI973077, AI973087, and AI675515.
HMVDE10	8154	861184	1 - 730	15 - 744	AA460638.
HMVCY89	8155	786651	1 - 504	15 - 518	R11102, R11103, H47988, H81110, R11125, and AC005611.
HMVCY14	8156	657801	1 - 461	15 - 475	T96219, T97232, T96458, AF157101, and AF025884.
HMVCY26	8157	681174	1 - 354	15 - 368	R25770, AA249108, AI741586, and AC002519.
HMVBY77	8158	771974	1 - 563	15 - 577	T65331, F11774, F11773, AI364568, AA557911, R17490, AA196160, R10144, T60316, AA493829, AA150013, AA806789, AW151637, AW151645, AW151646, AI1339971, AW249468, AA714190, AI624666, H81732, T56025, AI567148, AA363957, AA226679, AA484191, AI678754, AI360630, AI281401, AA515440, NG3891, AI538106, AI273990, AI933478, AA434078, W67486, AA565319, AW023515, AI242432, AI242531, W87421, AI814959, W67485, T93105, AI689198, AA516058, AA599080, F25580, AA525332, AI149238, AA581317, AI3000054, AW226163, AI823533, AI823535, R51582, AI933486, AA837325, AI421723, AA601265, T64444, AW084431, AA584635, H53189, AI119156, R92658, AI119182, T05617, AA361513, AA742764, AI254463, AI252005, AA564682, AW028834, AA601673, AI038977, AI299192, AI909229, AA613850, AA586433, AI869786, AI891075, AW058223, AA159006, AC006479, AC004859, AC004921, S68013, AC005531, AI008719, AI021528, AC006509, AC007738, AC001550, AC005217, AB023050, AF035968, AC000037, AC000032, AC004671, AC004491, AC007868, AI031005, AC004914, AC005609, AC005903, AC005327, AP000499, AB026898, AC012085, AI133163, AI049766, AC003689, AI031584, AC002347, Z84572, AP000556, AP000552, AI132987, AC006960, AI078581, AC005216, AF003529, AC004477, AC006006, AI035423, AC000035, AB020865, AI031276, AC004692, AI031230, AC000025, AC005057, AC008134, AC007917, AC005529, M76423, AC005952, AC004472, AI049631, AI121757, AC008372, AI049795, AI032821, AC005669, Z68284, AC007955, AI133238, AI049832, AC003690, Z92546, AP000010, AP000151, AI022162, AI135783, AI008630, AI022799, Z49866, AC004054, AI117355, AC007386, AC006121, AC005280, AI049776, AI031602, AP000245, Z69890, AC006541, AC005391, Z99297, AI096817, AC003983, AC005208, AC004000, AI022396, AC005484, Z97054, AC007384, AC009731, AC005881, AC005730, AI021939, AD000864, AF024533, Z38338, AI031985, AI049697, AC005088, AC000065, AI050341, AI031735, AI133245, AC007065, AC006312, AI109827, AC007025, AC005694, AP000171, AC004217, AI034402, AC006454, AI022241, AI117338, U72790, AC006020, AC004262, Z82901, AC004736, Z97181, AI121595, AC007276, AI021391, AC002476, Z54146, AP000298, AC005513, AF039907, AI023694, Z82190, AC004764, AC005255, AP000112, AI0200044, AI109623, AI078604, AC002039, AC003015, AI021940, AC004912, AC005094, AC005089, AF134726, D84394, AC004805, AI135744, AP000689, AI022320, AI022318, AI023876, AC007285, Z81364, AC007314, AP000282, AP001054, AC005081, AC007731, Z99716, AC004616, AI078638, U95090, AC005841, AI021368, Z83839, AC006116, AC018633,

SEQ ID NO:X or fragments thereof; (c) the amino acid sequence encoded by the complement of SEQ ID NO:X or fragments thereof; (d) the amino acid sequence encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2 or fragments thereof; and (e) the amino acid sequence encoded by cDNA contained in Clone ID NO:Z or fragments thereof; wherein the fragments or variants have 1-5, 5-10, 5-25, 5-50, 10-50 or 50-150, amino acid residue additions, substitutions, and/or deletions when compared to the reference amino acid sequence. In preferred embodiments, the amino acid substitutions are conservative. Polynucleotides encoding these polypeptides are also encompassed by the invention.

#### *Polynucleotide and Polypeptide Fragments*

[0127] The present invention is also directed to polynucleotide fragments of the polynucleotides (nucleic acids) of the invention. In the present invention, a "polynucleotide fragment" refers to a polynucleotide having a nucleic acid sequence which, for example: is a portion of the cDNA contained in Clone ID NO:Z or the complementary strand thereto; is a portion of the polynucleotide sequence encoding the polypeptide encoded by the cDNA contained in Clone ID NO:Z or the complementary strand thereto; is a portion of a polynucleotide sequence encoding the amino acid sequence encoded by the region of SEQ ID NO:X as defined in columns 8 and 9 of Table 2 or the complementary strand thereto; is a portion of the polynucleotide sequence of SEQ ID NO:X as defined in columns 8 and 9 of Table 2 or the complementary strand thereto; is a portion of the polynucleotide sequence in SEQ ID NO:X or the complementary strand thereto; is a polynucleotide sequence encoding a portion of the polypeptide of SEQ ID NO:Y; is a polynucleotide sequence encoding a portion of a polypeptide encoded by SEQ ID NO:X; is a polynucleotide sequence encoding a portion of a polypeptide encoded by the complement of the polynucleotide sequence in SEQ ID NO:X; is a portion of a polynucleotide sequence encoding the amino acid sequence encoded by the region of SEQ ID NO:B as defined in column 6 of Table 1B or the complementary strand thereto; or is a portion of the polynucleotide sequence of SEQ ID NO:B as defined in column 6 of Table 1B or the complementary strand thereto.

[0128] The polynucleotide fragments of the invention are preferably at least about 15 nt, and more preferably at least about 20 nt, still more preferably at least about 30 nt, and

even more preferably, at least about 40 nt, at least about 50 nt, at least about 75 nt, or at least about 150 nt in length. A fragment "at least 20 nt in length," for example, is intended to include 20 or more contiguous bases from the cDNA sequence contained in Clone ID NO:Z, or the nucleotide sequence shown in SEQ ID NO:X or the complementary strand thereto. In this context "about" includes the particularly recited value or a value larger or smaller by several (5, 4, 3, 2, or 1) nucleotides, at either terminus or at both termini. These nucleotide fragments have uses that include, but are not limited to, as diagnostic probes and primers as discussed herein. Of course, larger fragments (e.g., at least 160, 170, 180, 190, 200, 250, 500, 600, 1000, or 2000 nucleotides in length) are also encompassed by the invention.

[0129] Moreover, representative examples of polynucleotide fragments of the invention, comprise, or alternatively consist of, a sequence from about nucleotide number 1-50, 51-100, 101-150, 151-200, 201-250, 251-300, 301-350, 351-400, 401-450, 451-500, 501-550, 551-600, 651-700, 701-750, 751-800, 800-850, 851-900, 901-950, 951-1000, 1001-1050, 1051-1100, 1101-1150, 1151-1200, 1201-1250, 1251-1300, 1301-1350, 1351-1400, 1401-1450, 1451-1500, 1501-1550, 1551-1600, 1601-1650, 1651-1700, 1701-1750, 1751-1800, 1801-1850, 1851-1900, 1901-1950, 1951-2000, 2001-2050, 2051-2100, 2101-2150, 2151-2200, 2201-2250, 2251-2300, 2301-2350, 2351-2400, 2401-2450, 2451-2500, 2501-2550, 2551-2600, 2601-2650, 2651-2700, 2701-2750, 2751-2800, 2801-2850, 2851-2900, 2901-2950, 2951-3000, 3001-3050, 3051-3100, 3101-3150, 3151-3200, 3201-3250, 3251-3300, 3301-3350, 3351-3400, 3401-3450, 3451-3500, 3501-3550, 3551-3600, 3601-3650, 3651-3700, 3701-3750, 3751-3800, 3801-3850, 3851-3900, 3901-3950, 3951-4000, 4001-4050, 4051-4100, 4101-4150, 4151-4200, 4201-4250, 4251-4300, 4301-4350, 4351-4400, 4401-4450, 4451-4500, 4501-4550, 4551-4600, 4601-4650, 4651-4700, 4701-4750, 4751-4800, 4801-4850, 4851-4900, 4901-4950, 4951-5000, 5001-5050, 5051-5100, 5101-5150, 5151-5200, 5201-5250, 5251-5300, 5301-5350, 5351-5400, 5401-5450, 5451-5500, 5501-5550, 5551-5600, 5601-5650, 5651-5700, 5701-5750, 5751-5800, 5801-5850, 5851-5900, 5901-5950, 5951-6000, 6001-6050, 6051-6100, 6101-6150, 6151-6200, 6201-6250, 6251-6300, 6301-6350, 6351-6400, 6401-6450, 6451-6500, 6501-6550, 6551-6600, 6601-6650, 6651-6700, 6701-6750, 6751-6800, 6801-6850, 6851-6900, 6901-6950, 6951-7000, 7001-7050, 7051-7100, 7101-7150, 7151-7200, 7201-7250, 7251-7300 or 7301 to the end of SEQ ID NO:X, or the complementary strand thereto. In this context "about" includes

the particularly recited range or a range larger or smaller by several (5, 4, 3, 2, or 1) nucleotides, at either terminus or at both termini. Preferably, these fragments encode a polypeptide which has a functional activity (e.g., biological activity). More preferably, these polynucleotides can be used as probes or primers as discussed herein. Polynucleotides which hybridize to one or more of these polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions are also encompassed by the invention, as are polypeptides encoded by these polynucleotides.

[0130] Further representative examples of polynucleotide fragments of the invention, comprise, or alternatively consist of, a sequence from about nucleotide number 1-50, 51-100, 101-150, 151-200, 201-250, 251-300, 301-350, 351-400, 401-450, 451-500, 501-550, 551-600, 651-700, 701-750, 751-800, 800-850, 851-900, 901-950, 951-1000, 1001-1050, 1051-1100, 1101-1150, 1151-1200, 1201-1250, 1251-1300, 1301-1350, 1351-1400, 1401-1450, 1451-1500, 1501-1550, 1551-1600, 1601-1650, 1651-1700, 1701-1750, 1751-1800, 1801-1850, 1851-1900, 1901-1950, 1951-2000, 2001-2050, 2051-2100, 2101-2150, 2151-2200, 2201-2250, 2251-2300, 2301-2350, 2351-2400, 2401-2450, 2451-2500, 2501-2550, 2551-2600, 2601-2650, 2651-2700, 2701-2750, 2751-2800, 2801-2850, 2851-2900, 2901-2950, 2951-3000, 3001-3050, 3051-3100, 3101-3150, 3151-3200, 3201-3250, 3251-3300, 3301-3350, 3351-3400, 3401-3450, 3451-3500, 3501-3550, 3551-3600, 3601-3650, 3651-3700, 3701-3750, 3751-3800, 3801-3850, 3851-3900, 3901-3950, 3951-4000, 4001-4050, 4051-4100, 4101-4150, 4151-4200, 4201-4250, 4251-4300, 4301-4350, 4351-4400, 4401-4450, 4451-4500, 4501-4550, 4551-4600, 4601-4650, 4651-4700, 4701-4750, 4751-4800, 4801-4850, 4851-4900, 4901-4950, 4951-5000, 5001-5050, 5051-5100, 5101-5150, 5151-5200, 5201-5250, 5251-5300, 5301-5350, 5351-5400, 5401-5450, 5451-5500, 5501-5550, 5551-5600, 5601-5650, 5651-5700, 5701-5750, 5751-5800, 5801-5850, 5851-5900, 5901-5950, 5951-6000, 6001-6050, 6051-6100, 6101-6150, 6151-6200, 6201-6250, 6251-6300, 6301-6350, 6351-6400, 6401-6450, 6451-6500, 6501-6550, 6551-6600, 6601-6650, 6651-6700, 6701-6750, 6751-6800, 6801-6850, 6851-6900, 6901-6950, 6951-7000, 7001-7050, 7051-7100, 7101-7150, 7151-7200, 7201-7250, 7251-7300 or 7301 to the end of the cDNA sequence contained in Clone ID NO:Z, or the complementary strand thereto. In this context "about" includes the particularly recited range or a range larger or smaller by several (5, 4, 3, 2, or 1) nucleotides, at either terminus or at both termini. Preferably, these fragments encode a polypeptide which has a functional activity (e.g., biological activity).

More preferably, these polynucleotides can be used as probes or primers as discussed herein. Polynucleotides which hybridize to one or more of these polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions are also encompassed by the invention, as are polypeptides encoded by these polynucleotides.

[0131] Moreover, representative examples of polynucleotide fragments of the invention comprise, or alternatively consist of, a nucleic acid sequence comprising one, two, three, four, five, six, seven, eight, nine, ten, or more of the above described polynucleotide fragments of the invention in combination with a polynucleotide sequence delineated in Table 1B column 6. Additional, representative examples of polynucleotide fragments of the invention comprise, or alternatively consist of, a nucleic acid sequence comprising one, two, three, four, five, six, seven, eight, nine, ten, or more of the above described polynucleotide fragments of the invention in combination with a polynucleotide sequence that is the complementary strand of a sequence delineated in column 6 of Table 1B. In further embodiments, the above-described polynucleotide fragments of the invention comprise, or alternatively consist of, sequences delineated in Table 1B, column 6, and have a nucleic acid sequence which is different from that of the BAC fragment having the sequence disclosed in SEQ ID NO:B (see Table 1B, column 5). In additional embodiments, the above-described polynucleotide fragments of the invention comprise, or alternatively consist of, sequences delineated in Table 1B, column 6, and have a nucleic acid sequence which is different from that published for the BAC clone identified as BAC ID NO:A (see Table 1B, column 4). In additional embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated Table 1B, column 6, and have a nucleic acid sequence which is different from that contained in the BAC clone identified as BAC ID NO:A (see Table 1B, column 4). Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides and polypeptides are also encompassed by the invention.

[0132] In additional specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more fragments of the sequences delineated in column 6 of Table 1B, and the polynucleotide sequence of SEQ ID NO:X (e.g., as defined in Table 1B, column 2) or fragments or

variants thereof. Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention.

[0133] In additional specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more fragments of the sequences delineated in column 6 of Table 1B which correspond to the same Clone ID NO:Z (see Table 1B, column 1), and the polynucleotide sequence of SEQ ID NO:X (e.g., as defined in Table 1A or 1B) or fragments or variants thereof. Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention.

[0134] In further specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more fragments of the sequences delineated in the same row of column 6 of Table 1B, and the polynucleotide sequence of SEQ ID NO:X (e.g., as defined in Table 1A or 1B) or fragments or variants thereof. Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention.

[0135] In additional specific embodiments, polynucleotides of the invention comprise, or alternatively consist of a polynucleotide sequence in which the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1B and the 5' 10 polynucleotides of the sequence of SEQ ID NO:X are directly contiguous. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

[0136] In additional specific embodiments, polynucleotides of the invention comprise, or alternatively consist of a polynucleotide sequence in which the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1B and the 5' 10 polynucleotides of

a fragment or variant of the sequence of SEQ ID NO:X (e.g., as described herein) are directly contiguous Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

**[0137]** In further specific embodiments, polynucleotides of the invention comprise, or alternatively consist of a polynucleotide sequence in which the 3' 10 polynucleotides of a fragment or variant of the sequence of SEQ ID NO:X and the 5' 10 polynucleotides of the sequence of one of the sequences delineated in column 6 of Table 1B are directly contiguous. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

**[0138]** In specific embodiments, polynucleotides of the invention comprise, or alternatively consist of a polynucleotide sequence in which the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1B and the 5' 10 polynucleotides of another sequence in column 6 are directly contiguous. In preferred embodiments, the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1B is directly contiguous with the 5' 10 polynucleotides of the next sequential exon delineated in Table 1B, column 6. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also



encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

[0139] In the present invention, a "polypeptide fragment" refers to an amino acid sequence which is a portion of that contained in SEQ ID NO:Y, a portion of an amino acid sequence encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, a portion of an amino acid sequence encoded by the polynucleotide sequence of SEQ ID NO:X, a portion of an amino acid sequence encoded by the complement of the polynucleotide sequence in SEQ ID NO:X, and/or a portion of an amino acid sequence encoded by the cDNA contained in Clone ID NO:Z. Protein (polypeptide) fragments may be "free-standing," or comprised within a larger polypeptide of which the fragment forms a part or region, most preferably as a single continuous region. Representative examples of polypeptide fragments of the invention, include, for example, fragments comprising, or alternatively consisting of, from about amino acid number 1-20, 21-40, 41-60, 61-80, 81-100, 102-120, 121-140, 141-160, 161-180, 181-200, 201-220, 221-240, 241-260, 261-280, 281-300, 301-320, 321-340, 341-360, 361-380, 381-400, 401-420, 421-440, 441-460, 461-480, 481-500, 501-520, 521-540, 541-560, 561-580, 581-600, 601-620, 621-640, 641-660, 661-680, 681-700, 701-720, 721-740, 741-760, 761-780, 781-800, 801-820, 821-840, 841-860, 861-880, 881-900, 901-920, 921-940, 941-960, 961-980, 981-1000, 1001-1020, 1021-1040, 1041-1060, 1061-1080, 1081-1100, 1101-1120, 1121-1140, 1141-1160, 1161-1180, 1181-1200, 1201-1220, 1221-1240, 1241-1260, 1261-1280, 1281-1300, 1301-1320, 1321-1340, 1341-1360, 1361-1380, 1381-1400, 1401-1420, 1421-1440, or 1441 to the end of the coding region. In a preferred embodiment, polypeptide fragments of the invention include, for example, fragments comprising, or alternatively consisting of, from about amino acid number 1-20, 21-40, 41-60, 61-80, 81-100, 102-120, 121-140, 141-160, 161-180, 181-200, 201-220, 221-240, 241-260, 261-280, 281-300, 301-320, 321-340, 341-360, 361-380, 381-400, 401-420, 421-440, 441-460, 461-480, 481-500, 501-520, 521-540, 541-560, 561-580, 581-600, 601-620, 621-640, 641-660, 661-680, 681-700, 701-720, 721-740, 741-760, 761-780, 781-800, 801-820, 821-840, 841-860, 861-880, 881-900, 901-920, 921-940, 941-960, 961-980, 981-1000, 1001-1020, 1021-1040, 1041-1060, 1061-1080, 1081-1100, 1101-1120, 1121-1140, 1141-1160, 1161-1180, 1181-1200, 1201-1220, 1221-1240, 1241-1260, 1261-1280, 1281-1300, 1301-1320, 1321-1340, 1341-1360, 1361-1380, 1381-

1400, 1401-1420, 1421-1440, or 1441 to the end of the coding region of SEQ ID NO:Y. Moreover, polypeptide fragments of the invention may be at least about 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 100, 110, 120, 130, 140, or 150 amino acids in length. In this context "about" includes the particularly recited ranges or values, or ranges or values larger or smaller by several (5, 4, 3, 2, or 1) amino acids, at either extreme or at both extremes. Polynucleotides encoding these polypeptide fragments are also encompassed by the invention.

**[0140]** Even if deletion of one or more amino acids from the N-terminus of a protein results in modification or loss of one or more biological functions of the protein, other functional activities (e.g., biological activities, ability to multimerize, ability to bind a ligand) may still be retained. For example, the ability of shortened muteins to induce and/or bind to antibodies which recognize the complete or mature forms of the polypeptides generally will be retained when less than the majority of the residues of the complete or mature polypeptide are removed from the N-terminus. Whether a particular polypeptide lacking N-terminal residues of a complete polypeptide retains such immunologic activities can readily be determined by routine methods described herein and otherwise known in the art. It is not unlikely that a mutein with a large number of deleted N-terminal amino acid residues may retain some biological or immunogenic activities. In fact, peptides composed of as few as six amino acid residues may often evoke an immune response.

**[0141]** Accordingly, polypeptide fragments include the secreted protein as well as the mature form. Further preferred polypeptide fragments include the secreted protein or the mature form having a continuous series of deleted residues from the amino or the carboxy terminus, or both. For example, any number of amino acids, ranging from 1-60, can be deleted from the amino terminus of either the secreted polypeptide or the mature form. Similarly, any number of amino acids, ranging from 1-30, can be deleted from the carboxy terminus of the secreted protein or mature form. Furthermore, any combination of the above amino and carboxy terminus deletions is preferred. Similarly, polynucleotides encoding these polypeptide fragments are also preferred.

**[0142]** The present invention further provides polypeptides having one or more residues deleted from the amino terminus of the amino acid sequence of a polypeptide disclosed herein (e.g., a polypeptide of SEQ ID NO:Y, a polypeptide encoded by the

polynucleotide sequence contained in SEQ ID NO:X or the complement thereof, a polypeptide encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, a polypeptide encoded by the portion of SEQ ID NO:B as defined in column 6 of Table 1B, and/or a polypeptide encoded by the cDNA contained in Clone ID NO:Z). In particular, N-terminal deletions may be described by the general formula m-q, where q is a whole integer representing the total number of amino acid residues in a polypeptide of the invention (e.g., the polypeptide disclosed in SEQ ID NO:Y, or the polypeptide encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2), and m is defined as any integer ranging from 2 to q-6. Polynucleotides encoding these polypeptides are also encompassed by the invention.

[0143] The present invention further provides polypeptides having one or more residues from the carboxy terminus of the amino acid sequence of a polypeptide disclosed herein (e.g., a polypeptide of SEQ ID NO:Y, a polypeptide encoded by the polynucleotide sequence contained in SEQ ID NO:X, a polypeptide encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, and/or a polypeptide encoded by the cDNA contained in Clone ID NO:Z). In particular, C-terminal deletions may be described by the general formula 1-n, where n is any whole integer ranging from 6 to q-1, and where n corresponds to the position of amino acid residue in a polypeptide of the invention. Polynucleotides encoding these polypeptides are also encompassed by the invention.

[0144] In addition, any of the above described N- or C-terminal deletions can be combined to produce a N- and C-terminal deleted polypeptide. The invention also provides polypeptides having one or more amino acids deleted from both the amino and the carboxyl termini, which may be described generally as having residues m-n of a polypeptide encoded by SEQ ID NO:X (e.g., including, but not limited to, the preferred polypeptide disclosed as SEQ ID NO:Y and the polypeptide encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2), the cDNA contained in Clone ID NO:Z, and/or the complement thereof, where n and m are integers as described above. Polynucleotides encoding these polypeptides are also encompassed by the invention.

[0145] Also as mentioned above, even if deletion of one or more amino acids from the C-terminus of a protein results in modification or loss of one or more biological functions of the protein, other functional activities (e.g., biological activities, ability to multimerize, ability to bind a ligand) may still be retained. For example the ability of the shortened

mutein to induce and/or bind to antibodies which recognize the complete or mature forms of the polypeptide generally will be retained when less than the majority of the residues of the complete or mature polypeptide are removed from the C-terminus. Whether a particular polypeptide lacking C-terminal residues of a complete polypeptide retains such immunologic activities can readily be determined by routine methods described herein and otherwise known in the art. It is not unlikely that a mutein with a large number of deleted C-terminal amino acid residues may retain some biological or immunogenic activities. In fact, peptides composed of as few as six amino acid residues may often evoke an immune response.

[0146] The present application is also directed to proteins containing polypeptides at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to a polypeptide sequence set forth herein. In preferred embodiments, the application is directed to proteins containing polypeptides at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to polypeptides having the amino acid sequence of the specific N- and C-terminal deletions. Polynucleotides encoding these polypeptides are also encompassed by the invention.

[0147] Any polypeptide sequence encoded by, for example, the polynucleotide sequences set forth as SEQ ID NO:X or the complement thereof, (presented, for example, in Tables 1A and 2), the cDNA contained in Clone ID NO:Z, or the polynucleotide sequence as defined in column 6 of Table 1B, may be analyzed to determine certain preferred regions of the polypeptide. For example, the amino acid sequence of a polypeptide encoded by a polynucleotide sequence of SEQ ID NO:X (e.g., the polypeptide of SEQ ID NO:Y and the polypeptide encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2) or the cDNA contained in Clone ID NO:Z may be analyzed using the default parameters of the DNASTAR computer algorithm (DNASTAR, Inc., 1228 S. Park St., Madison, WI 53715 USA; <http://www.dnastar.com/>).

[0148] Polypeptide regions that may be routinely obtained using the DNASTAR computer algorithm include, but are not limited to, Garnier-Robson alpha-regions, beta-regions, turn-regions, and coil-regions; Chou-Fasman alpha-regions, beta-regions, and turn-regions; Kyte-Doolittle hydrophilic regions and hydrophobic regions; Eisenberg alpha- and beta-amphipathic regions; Karplus-Schulz flexible regions; Emini surface-forming regions; and Jameson-Wolf regions of high antigenic index. Among

highly preferred polynucleotides of the invention in this regard are those that encode polypeptides comprising regions that combine several structural features, such as several (e.g., 1, 2, 3 or 4) of the features set out above.

[0149] Additionally, Kyte-Doolittle hydrophilic regions and hydrophobic regions, Emini surface-forming regions, and Jameson-Wolf regions of high antigenic index (i.e., containing four or more contiguous amino acids having an antigenic index of greater than or equal to 1.5, as identified using the default parameters of the Jameson-Wolf program) can routinely be used to determine polypeptide regions that exhibit a high degree of potential for antigenicity. Regions of high antigenicity are determined from data by DNASTAR analysis by choosing values which represent regions of the polypeptide which are likely to be exposed on the surface of the polypeptide in an environment in which antigen recognition may occur in the process of initiation of an immune response.

[0150] Preferred polypeptide fragments of the invention are fragments comprising, or alternatively, consisting of, an amino acid sequence that displays a functional activity (e.g. biological activity) of the polypeptide sequence of which the amino acid sequence is a fragment. By a polypeptide displaying a "functional activity" is meant a polypeptide capable of one or more known functional activities associated with a full-length protein, such as, for example, biological activity, antigenicity, immunogenicity, and/or multimerization, as described herein.

[0151] Other preferred polypeptide fragments are biologically active fragments. Biologically active fragments are those exhibiting activity similar, but not necessarily identical, to an activity of the polypeptide of the present invention. The biological activity of the fragments may include an improved desired activity, or a decreased undesirable activity.

[0152] In preferred embodiments, polypeptides of the invention comprise, or alternatively consist of, one, two, three, four, five or more of the antigenic fragments of the polypeptide of SEQ ID NO:Y, or portions thereof. Polynucleotides encoding these polypeptides are also encompassed by the invention.

[0153] The present invention encompasses polypeptides comprising, or alternatively consisting of, an epitope of: the polypeptide sequence shown in SEQ ID NO:Y; a polypeptide sequence encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide sequence encoded by the portion of SEQ ID NO:X as defined in columns 8

and 9 of Table 2; the polypeptide sequence encoded by the portion of SEQ ID NO:B as defined in column 6 of Table 1B or the complement thereto; the polypeptide sequence encoded by the cDNA contained in Clone ID NO:Z; or the polypeptide sequence encoded by a polynucleotide that hybridizes to the sequence of SEQ ID NO:X, the complement of the sequence of SEQ ID NO:X, the complement of a portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, or the cDNA sequence contained in Clone ID NO:Z under stringent hybridization conditions or alternatively, under lower stringency hybridization as defined *supra*. The present invention further encompasses polynucleotide sequences encoding an epitope of a polypeptide sequence of the invention (such as, for example, the sequence disclosed in SEQ ID NO:X, or a fragment thereof), polynucleotide sequences of the complementary strand of a polynucleotide sequence encoding an epitope of the invention, and polynucleotide sequences which hybridize to the complementary strand under stringent hybridization conditions or alternatively, under lower stringency hybridization conditions defined *supra*.

[0154] The term "epitopes," as used herein, refers to portions of a polypeptide having antigenic or immunogenic activity in an animal, preferably a mammal, and most preferably in a human. In a preferred embodiment, the present invention encompasses a polypeptide comprising an epitope, as well as the polynucleotide encoding this polypeptide. An "immunogenic epitope," as used herein, is defined as a portion of a protein that elicits an antibody response in an animal, as determined by any method known in the art, for example, by the methods for generating antibodies described *infra*. (See, for example, Geysen et al., Proc. Natl. Acad. Sci. USA 81:3998-4002 (1983)). The term "antigenic epitope," as used herein, is defined as a portion of a protein to which an antibody can immunospecifically bind its antigen as determined by any method well known in the art, for example, by the immunoassays described herein. Immunospecific binding excludes non-specific binding but does not necessarily exclude cross-reactivity with other antigens. Antigenic epitopes need not necessarily be immunogenic.

[0155] Fragments which function as epitopes may be produced by any conventional means. (See, e.g., Houghten, R. A., Proc. Natl. Acad. Sci. USA 82:5131-5135 (1985) further described in U.S. Patent No. 4,631,211.)

[0156] In the present invention, antigenic epitopes preferably contain a sequence of at least 4, at least 5, at least 6, at least 7, more preferably at least 8, at least 9, at least 10, at

least 11, at least 12, at least 13, at least 14, at least 15, at least 20, at least 25, at least 30, at least 40, at least 50, and, most preferably, between about 15 to about 30 amino acids. Preferred polypeptides comprising immunogenic or antigenic epitopes are at least 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, or 100 amino acid residues in length. Additional non-exclusive preferred antigenic epitopes include the antigenic epitopes disclosed herein, as well as portions thereof. Antigenic epitopes are useful, for example, to raise antibodies, including monoclonal antibodies, that specifically bind the epitope. Preferred antigenic epitopes include the antigenic epitopes disclosed herein, as well as any combination of two, three, four, five or more of these antigenic epitopes. Antigenic epitopes can be used as the target molecules in immunoassays. (See, for instance, Wilson et al., *Cell* 37:767-778 (1984); Sutcliffe et al., *Science* 219:660-666 (1983)).

**[0157]** Non-limiting examples of epitopes of polypeptides that can be used to generate antibodies of the invention include a polypeptide comprising, or alternatively consisting of, at least one, two, three, four, five, six or more of the portion(s) of SEQ ID NO:Y specified in column 6 of Table 1A. These polypeptide fragments have been determined to bear antigenic epitopes of the proteins of the invention by the analysis of the Jameson-Wolf antigenic index which is included in the DNASTar suite of computer programs. By "comprise" it is intended that a polypeptide contains at least one, two, three, four, five, six or more of the portion(s) of SEQ ID NO:Y shown in column 6 of Table 1A, but it may contain additional flanking residues on either the amino or carboxyl termini of the recited portion. Such additional flanking sequences are preferably sequences naturally found adjacent to the portion; i.e., contiguous sequence shown in SEQ ID NO:Y. The flanking sequence may, however, be sequences from a heterologous polypeptide, such as from another protein described herein or from a heterologous polypeptide not described herein. In particular embodiments, epitope portions of a polypeptide of the invention comprise one, two, three, or more of the portions of SEQ ID NO:Y shown in column 6 of Table 1A. Polynucleotides encoding these polypeptides are also encompassed by the invention.

**[0158]** Similarly, immunogenic epitopes can be used, for example, to induce antibodies according to methods well known in the art. See, for instance, Sutcliffe et al., *supra*; Wilson et al., *supra*; Chow et al., *Proc. Natl. Acad. Sci. USA* 82:910-914; and Bittler et al., *J. Gen. Virol.* 66:2347-2354 (1985). Preferred immunogenic epitopes

include the immunogenic epitopes disclosed herein, as well as any combination of two, three, four, five or more of these immunogenic epitopes. The polypeptides comprising one or more immunogenic epitopes may be presented for eliciting an antibody response together with a carrier protein, such as an albumin, to an animal system (such as rabbit or mouse), or, if the polypeptide is of sufficient length (at least about 25 amino acids), the polypeptide may be presented without a carrier. However, immunogenic epitopes comprising as few as 8 to 10 amino acids have been shown to be sufficient to raise antibodies capable of binding to, at the very least, linear epitopes in a denatured polypeptide (e.g., in Western blotting).

[0159] Epitope-bearing polypeptides of the present invention may be used to induce antibodies according to methods well known in the art including, but not limited to, *in vivo* immunization, *in vitro* immunization, and phage display methods. See, e.g., Sutcliffe et al., *supra*; Wilson et al., *supra*, and Bittle et al., J. Gen. Virol., 66:2347-2354 (1985). If *in vivo* immunization is used, animals may be immunized with free peptide; however, anti-peptide antibody titer may be boosted by coupling the peptide to a macromolecular carrier, such as keyhole limpet hemacyanin (KLH) or tetanus toxoid. For instance, peptides containing cysteine residues may be coupled to a carrier using a linker such as maleimidobenzoyl- N-hydroxysuccinimide ester (MBS), while other peptides may be coupled to carriers using a more general linking agent such as glutaraldehyde. Animals such as rabbits, rats and mice are immunized with either free or carrier- coupled peptides, for instance, by intraperitoneal and/or intradermal injection of emulsions containing about 100 µg of peptide or carrier protein and Freund's adjuvant or any other adjuvant known for stimulating an immune response. Several booster injections may be needed, for instance, at intervals of about two weeks, to provide a useful titer of anti-peptide antibody which can be detected, for example, by ELISA assay using free peptide adsorbed to a solid surface. The titer of anti-peptide antibodies in serum from an immunized animal may be increased by selection of anti-peptide antibodies, for instance, by adsorption to the peptide on a solid support and elution of the selected antibodies according to methods well known in the art.

[0160] As one of skill in the art will appreciate, and as discussed above, the polypeptides of the present invention (e.g., those comprising an immunogenic or antigenic epitope) can be fused to heterologous polypeptide sequences. For example, polypeptides of the present



invention (including fragments or variants thereof), may be fused with the constant domain of immunoglobulins (IgA, IgE, IgG, IgM), or portions thereof (CH1, CH2, CH3, or any combination thereof and portions thereof, resulting in chimeric polypeptides. By way of another non-limiting example, polypeptides and/or antibodies of the present invention (including fragments or variants thereof) may be fused with albumin (including but not limited to recombinant human serum albumin or fragments or variants thereof (see, e.g., U.S. Patent No. 5,876,969, issued March 2, 1999, EP Patent 0 413 622, and U.S. Patent No. 5,766,883, issued June 16, 1998, herein incorporated by reference in their entirety)). In a preferred embodiment, polypeptides and/or antibodies of the present invention (including fragments or variants thereof) are fused with the mature form of human serum albumin (i.e., amino acids 1 – 585 of human serum albumin as shown in Figures 1 and 2 of EP Patent 0 322 094) which is herein incorporated by reference in its entirety. In another preferred embodiment, polypeptides and/or antibodies of the present invention (including fragments or variants thereof) are fused with polypeptide fragments comprising, or alternatively consisting of, amino acid residues 1-z of human serum albumin, where z is an integer from 369 to 419, as described in U.S. Patent 5,766,883 herein incorporated by reference in its entirety. Polypeptides and/or antibodies of the present invention (including fragments or variants thereof) may be fused to either the N- or C-terminal end of the heterologous protein (e.g., immunoglobulin Fc polypeptide or human serum albumin polypeptide). Polynucleotides encoding fusion proteins of the invention are also encompassed by the invention.

[0161] Such fusion proteins as those described above may facilitate purification and may increase half-life *in vivo*. This has been shown for chimeric proteins consisting of the first two domains of the human CD4-polypeptide and various domains of the constant regions of the heavy or light chains of mammalian immunoglobulins. See, e.g., EP 394,827; Traunecker et al., *Nature*, 331:84-86 (1988). Enhanced delivery of an antigen across the epithelial barrier to the immune system has been demonstrated for antigens (e.g., insulin) conjugated to an FcRn binding partner such as IgG or Fc fragments (see, e.g., PCT Publications WO 96/22024 and WO 99/04813). IgG Fusion proteins that have a disulfide-linked dimeric structure due to the IgG portion disulfide bonds have also been found to be more efficient in binding and neutralizing other molecules than monomeric polypeptides or fragments thereof alone. See, e.g., Fountoulakis et al., *J. Biochem.*,

270:3958-3964 (1995). Nucleic acids encoding the above epitopes can also be recombined with a gene of interest as an epitope tag (e.g., the hemagglutinin (HA) tag or flag tag) to aid in detection and purification of the expressed polypeptide. For example, a system described by Janknecht et al. allows for the ready purification of non-denatured fusion proteins expressed in human cell lines (Janknecht et al., 1991, Proc. Natl. Acad. Sci. USA 88:8972- 897). In this system, the gene of interest is subcloned into a vaccinia recombination plasmid such that the open reading frame of the gene is translationally fused to an amino-terminal tag consisting of six histidine residues. The tag serves as a matrix binding domain for the fusion protein. Extracts from cells infected with the recombinant vaccinia virus are loaded onto Ni<sup>2+</sup> nitriloacetic acid-agarose column and histidine-tagged proteins can be selectively eluted with imidazole-containing buffers.

#### *Fusion Proteins*

[0162] Any polypeptide of the present invention can be used to generate fusion proteins. For example, the polypeptide of the present invention, when fused to a second protein, can be used as an antigenic tag. Antibodies raised against the polypeptide of the present invention can be used to indirectly detect the second protein by binding to the polypeptide. Moreover, because secreted proteins target cellular locations based on trafficking signals, polypeptides of the present invention which are shown to be secreted can be used as targeting molecules once fused to other proteins.

[0163] Examples of domains that can be fused to polypeptides of the present invention include not only heterologous signal sequences, but also other heterologous functional regions. The fusion does not necessarily need to be direct, but may occur through linker sequences.

[0164] In certain preferred embodiments, proteins of the invention are fusion proteins comprising an amino acid sequence that is an N and/or C- terminal deletion of a polypeptide of the invention. In preferred embodiments, the invention is directed to a fusion protein comprising an amino acid sequence that is at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to a polypeptide sequence of the invention. Polynucleotides encoding these proteins are also encompassed by the invention.

[0165] Moreover, fusion proteins may also be engineered to improve characteristics of the polypeptide of the present invention. For instance, a region of additional amino acids,

particularly charged amino acids, may be added to the N-terminus of the polypeptide to improve stability and persistence during purification from the host cell or subsequent handling and storage. Also, peptide moieties may be added to the polypeptide to facilitate purification. Such regions may be removed prior to final preparation of the polypeptide. The addition of peptide moieties to facilitate handling of polypeptides are familiar and routine techniques in the art.

[0166] As one of skill in the art will appreciate that, as discussed above, polypeptides of the present invention, and epitope-bearing fragments thereof, can be combined with heterologous polypeptide sequences. For example, the polypeptides of the present invention may be fused with heterologous polypeptide sequences, for example, the polypeptides of the present invention may be fused with the constant domain of immunoglobulins (IgA, IgE, IgG, IgM) or portions thereof (CH1, CH2, CH3, and any combination thereof, including both entire domains and portions thereof), or albumin (including, but not limited to, native or recombinant human albumin or fragments or variants thereof (see, e.g., U.S. Patent No. 5,876,969, issued March 2, 1999, EP Patent 0 413 622, and U.S. Patent No. 5,766,883, issued June 16, 1998, herein incorporated by reference in their entirety)), resulting in chimeric polypeptides. For example, EP-A-O 464 533 (Canadian counterpart 2045869) discloses fusion proteins comprising various portions of constant region of immunoglobulin molecules together with another human protein or part thereof. In many cases, the Fc part in a fusion protein is beneficial in therapy and diagnosis, and thus can result in, for example, improved pharmacokinetic properties (EP-A 0232 262). Alternatively, deleting the Fc part after the fusion protein has been expressed, detected, and purified, would be desired. For example, the Fc portion may hinder therapy and diagnosis if the fusion protein is used as an antigen for immunizations. In drug discovery, for example, human proteins, such as hIL-5, have been fused with Fc portions for the purpose of high-throughput screening assays to identify antagonists of hIL-5. See, D. Bennett et al., *J. Molecular Recognition* 8:52-58 (1995); K. Johanson et al., *J. Biol. Chem.* 270:9459-9471 (1995).

[0167] Moreover, the polypeptides of the present invention can be fused to marker sequences, such as a polypeptide which facilitates purification of the fused polypeptide. In preferred embodiments, the marker amino acid sequence is a hexa-histidine peptide, such as the tag provided in a pQE vector (QIAGEN, Inc., 9259 Eton Avenue, Chatsworth,

CA, 91311), among others, many of which are commercially available. As described in Gentz et al., Proc. Natl. Acad. Sci. USA 86:821-824 (1989), for instance, hexa-histidine provides for convenient purification of the fusion protein. Another peptide tag useful for purification, the "HA" tag, corresponds to an epitope derived from the influenza hemagglutinin protein (Wilson et al., Cell 37:767 (1984).)

[0168] Additional fusion proteins of the invention may be generated through the techniques of gene-shuffling, motif-shuffling, exon-shuffling, and/or codon-shuffling (collectively referred to as "DNA shuffling"), briefly described below, and further described herein. DNA shuffling may be employed to modulate the activities of polypeptides of the invention, such methods can be used to generate polypeptides with altered activity, as well as agonists and antagonists of the polypeptides. See, generally, U.S. Patent Nos. 5,605,793; 5,811,238; 5,830,721; 5,834,252; and 5,837,458, and Patten et al., Curr. Opinion Biotechnol. 8:724-33 (1997); Harayama, Trends Biotechnol. 16(2):76-82 (1998); Hansson et al., J. Mol. Biol. 287:265-76 (1999); and Lorenzo and Blasco, Biotechniques 24(2):308-13 (1998); each of these patents and publications are hereby incorporated by reference in its entirety. In a preferred embodiment, one or more components, motifs, sections, parts, domains, fragments, etc., of a polynucleotide encoding a polypeptide of the invention may be recombined with one or more components, motifs, sections, parts, domains, fragments, etc., of one or more heterologous molecules encoding a heterologous polypeptide.

[0169] Thus, any of these above fusions can be engineered using the polynucleotides or the polypeptides of the present invention.

#### **Recombinant and Synthetic Production of Polypeptides of the Invention**

[0170] The present invention also relates to vectors containing the polynucleotide of the present invention, host cells, and the production of polypeptides by synthetic and recombinant techniques. The vector may be, for example, a phage, plasmid, viral, or retroviral vector. Retroviral vectors may be replication competent or replication defective. In the latter case, viral propagation generally will occur only in complementing host cells.

[0171] The polynucleotides of the invention may be joined to a vector containing a selectable marker for propagation in a host. Generally, a plasmid vector is introduced in a precipitate, such as a calcium phosphate precipitate, or in a complex with a charged lipid.

If the vector is a virus, it may be packaged *in vitro* using an appropriate packaging cell line and then transduced into host cells.

[0172] The polynucleotide insert should be operatively linked to an appropriate promoter, such as the phage lambda PL promoter, the *E. coli lac*, *trp*, *phoA* and *tac* promoters, the SV40 early and late promoters and promoters of retroviral LTRs, to name a few. Other suitable promoters will be known to the skilled artisan. The expression constructs will further contain sites for transcription initiation, termination, and, in the transcribed region, a ribosome binding site for translation. The coding portion of the transcripts expressed by the constructs will preferably include a translation initiating codon at the beginning and a termination codon (UAA, UGA or UAG) appropriately positioned at the end of the polypeptide to be translated.

[0173] As indicated, the expression vectors will preferably include at least one selectable marker. Such markers include dihydrofolate reductase, G418 or neomycin resistance, glutamine synthase, for eukaryotic cell culture and tetracycline, kanamycin or ampicillin resistance genes for culturing in *E. coli* and other bacteria. Representative examples of appropriate hosts include, but are not limited to, bacterial cells, such as *E. coli*, *Streptomyces* and *Salmonella typhimurium* cells; fungal cells, such as yeast cells (e.g., *Saccharomyces cerevisiae* or *Pichia pastoris* (ATCC Accession No. 201178)); insect cells such as *Drosophila* S2 and *Spodoptera* Sf9 cells; animal cells such as CHO, COS, 293, NSO and Bowes melanoma cells; and plant cells. Appropriate culture mediums and conditions for the above-described host cells are known in the art.

[0174] Among vectors preferred for use in bacteria include pQE70, pQE60 and pQE-9, available from QIAGEN, Inc.; pBluescript vectors, Phagescript vectors, pNH8A, pNH16a, pNH18A, pNH46A, available from Stratagene Cloning Systems, Inc.; and ptrc99a, pKK223-3, pKK233-3, pDR540, pRIT5 available from Pharmacia Biotech, Inc. Among preferred eukaryotic vectors are pWLNEO, pSV2CAT, pOG44, pXT1 and pSG available from Stratagene; and pSVK3, pBPV, pMSG and pSVL available from Pharmacia. Preferred expression vectors for use in yeast systems include, but are not limited to pYES2, pYD1, pTEF1/Zeo, pYES2/GS, pPICZ, pGAPZ, pGAPZalph, pPIC9, pPIC3.5, pHIL-D2, pHIL-S1, pPIC3.5K, pPIC9K, and PAO815 (all available from Invitrogen, Carlsbad, CA). Other suitable vectors will be readily apparent to the skilled artisan.

[0175] Vectors which use glutamine synthase (GS) or DHFR as the selectable markers can be amplified in the presence of the drugs methionine sulfoximine or methotrexate, respectively. An advantage of glutamine synthase based vectors are the availability of cell lines (e.g., the murine myeloma cell line, NS0) which are glutamine synthase negative. Glutamine synthase expression systems can also function in glutamine synthase expressing cells (e.g., Chinese Hamster Ovary (CHO) cells) by providing additional inhibitor to prevent the functioning of the endogenous gene. A glutamine synthase expression system and components thereof are detailed in PCT publications: WO87/04462; WO86/05807; WO89/01036; WO89/10404; and WO91/06657 which are hereby incorporated in their entireties by reference herein. Additionally, glutamine synthase expression vectors can be obtained from Lonza Biologics, Inc. (Portsmouth, NH). Expression and production of monoclonal antibodies using a GS expression system in murine myeloma cells is described in Bebbington et al., *Bio/technology* 10:169(1992) and in Biblia and Robinson *Biotechnol. Prog.* 11:1 (1995) which are herein incorporated by reference.

[0176] The present invention also relates to host cells containing the above-described vector constructs described herein, and additionally encompasses host cells containing nucleotide sequences of the invention that are operably associated with one or more heterologous control regions (e.g., promoter and/or enhancer) using techniques known of in the art. The host cell can be a higher eukaryotic cell, such as a mammalian cell (e.g., a human derived cell), or a lower eukaryotic cell, such as a yeast cell, or the host cell can be a prokaryotic cell, such as a bacterial cell. A host strain may be chosen which modulates the expression of the inserted gene sequences, or modifies and processes the gene product in the specific fashion desired. Expression from certain promoters can be elevated in the presence of certain inducers; thus expression of the genetically engineered polypeptide may be controlled. Furthermore, different host cells have characteristics and specific mechanisms for the translational and post-translational processing and modification (e.g., phosphorylation, cleavage) of proteins. Appropriate cell lines can be chosen to ensure the desired modifications and processing of the foreign protein expressed.

[0177] Introduction of the nucleic acids and nucleic acid constructs of the invention into the host cell can be effected by calcium phosphate transfection, DEAE-dextran mediated transfection, cationic lipid-mediated transfection, electroporation, transduction,

infection, or other methods. Such methods are described in many standard laboratory manuals, such as Davis et al., *Basic Methods In Molecular Biology* (1986). It is specifically contemplated that the polypeptides of the present invention may in fact be expressed by a host cell lacking a recombinant vector.

[0178] In addition to encompassing host cells containing the vector constructs discussed herein, the invention also encompasses primary, secondary, and immortalized host cells of vertebrate origin, particularly mammalian origin, that have been engineered to delete or replace endogenous genetic material (e.g., immune/hematopoietic antigen coding sequence), and/or to include genetic material (e.g., heterologous polynucleotide sequences) that is operably associated with immune/hematopoietic associated polynucleotides of the invention, and which activates, alters, and/or amplifies endogenous immune/hematopoietic associated polynucleotides. For example, techniques known in the art may be used to operably associate heterologous control regions (e.g., promoter and/or enhancer) and endogenous immune/hematopoietic associated polynucleotide sequences via homologous recombination (see, e.g., U.S. Patent Number 5,641,670, issued June 24, 1997; International Publication Number WO 96/29411; International Publication Number WO 94/12650; Koller et al., *Proc. Natl. Acad. Sci. USA* 86:8932-8935 (1989); and Zijlstra et al., *Nature* 342:435-438 (1989), the disclosures of each of which are incorporated by reference in their entireties).

[0179] Polypeptides of the present invention can also be recovered from: products purified from natural sources, including bodily fluids, tissues and cells, whether directly isolated or cultured; products of chemical synthetic procedures; and products produced by recombinant techniques from a prokaryotic or eukaryotic host, including, for example, bacterial, yeast, higher plant, insect, and mammalian cells. Depending upon the host employed in a recombinant production procedure, the polypeptides of the present invention may be glycosylated or may be non-glycosylated. In addition, polypeptides of the invention may also include an initial modified methionine residue, in some cases as a result of host-mediated processes. Thus, it is well known in the art that the N-terminal methionine encoded by the translation initiation codon generally is removed with high efficiency from any protein after translation in all eukaryotic cells. While the N-terminal methionine on most proteins also is efficiently removed in most prokaryotes, for some

proteins, this prokaryotic removal process is inefficient, depending on the nature of the amino acid to which the N-terminal methionine is covalently linked.

[0180] In one embodiment, the yeast *Pichia pastoris* is used to express polypeptides of the invention in a eukaryotic system. *Pichia pastoris* is a methylotrophic yeast which can metabolize methanol as its sole carbon source. A main step in the methanol metabolism pathway is the oxidation of methanol to formaldehyde using  $O_2$ . This reaction is catalyzed by the enzyme alcohol oxidase. In order to metabolize methanol as its sole carbon source, *Pichia pastoris* must generate high levels of alcohol oxidase due, in part, to the relatively low affinity of alcohol oxidase for  $O_2$ . Consequently, in a growth medium depending on methanol as a main carbon source, the promoter region of one of the two alcohol oxidase genes (*AOX1*) is highly active. In the presence of methanol, alcohol oxidase produced from the *AOX1* gene comprises up to approximately 30% of the total soluble protein in *Pichia pastoris*. See, Ellis, S.B., *et al.*, *Mol. Cell. Biol.* 5:1111-21 (1985); Koutz, P.J., *et al.*, *Yeast* 5:167-77 (1989); Tschopp, J.F., *et al.*, *Nucl. Acids Res.* 15:3859-76 (1987). Thus, a heterologous coding sequence, such as, for example, a polynucleotide of the present invention, under the transcriptional regulation of all or part of the *AOX1* regulatory sequence is expressed at exceptionally high levels in *Pichia* yeast grown in the presence of methanol.

[0181] In one example, the plasmid vector pPIC9K is used to express DNA encoding a polypeptide of the invention, as set forth herein, in a *Pichea* yeast system essentially as described in "Pichia Protocols: Methods in Molecular Biology," D.R. Higgins and J. Cregg, eds. The Humana Press, Totowa, NJ, 1998. This expression vector allows expression and secretion of a polypeptide of the invention by virtue of the strong *AOX1* promoter linked to the *Pichia pastoris* alkaline phosphatase (PHO) secretory signal peptide (i.e., leader) located upstream of a multiple cloning site.

[0182] Many other yeast vectors could be used in place of pPIC9K, such as, pYES2, pYD1, pTEF1/Zeo, pYES2/GS, pPICZ, pGAPZ, pGAPZalpha, pPIC9, pPIC3.5, pPHIL-D2, pPHIL-S1, pPIC3.5K, and PAO815, as one skilled in the art would readily appreciate, as long as the proposed expression construct provides appropriately located signals for



transcription, translation, secretion (if desired), and the like, including an in-frame AUG as required.

**[0183]** In another embodiment, high-level expression of a heterologous coding sequence, such as, for example, a polynucleotide of the present invention, may be achieved by cloning the heterologous polynucleotide of the invention into an expression vector such as, for example, pGAPZ or pGAPZalpha, and growing the yeast culture in the absence of methanol.

**[0184]** In addition to encompassing host cells containing the vector constructs discussed herein, the invention also encompasses primary, secondary, and immortalized host cells of vertebrate origin, particularly mammalian origin, that have been engineered to delete or replace endogenous genetic material (e.g., coding sequence), and/or to include genetic material (e.g., heterologous polynucleotide sequences) that is operably associated with polynucleotides of the invention, and which activates, alters, and/or amplifies endogenous polynucleotides. For example, techniques known in the art may be used to operably associate heterologous control regions (e.g., promoter and/or enhancer) and endogenous polynucleotide sequences via homologous recombination (see, e.g., U.S. Patent No. 5,641,670, issued June 24, 1997; International Publication No. WO 96/29411, published September 26, 1996; International Publication No. WO 94/12650, published August 4, 1994; Koller et al., Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); and Zijlstra et al., Nature 342:435-438 (1989), the disclosures of each of which are incorporated by reference in their entireties).

**[0185]** In addition, polypeptides of the invention can be chemically synthesized using techniques known in the art (e.g., see Creighton, 1983, *Proteins: Structures and Molecular Principles*, W.H. Freeman & Co., N.Y., and Hunkapiller et al., *Nature*, 310:105-111 (1984)). For example, a polypeptide corresponding to a fragment of a polypeptide can be synthesized by use of a peptide synthesizer. Furthermore, if desired, nonclassical amino acids or chemical amino acid analogs can be introduced as a substitution or addition into the polypeptide sequence. Non-classical amino acids include, but are not limited to, to the D-isomers of the common amino acids, 2,4-diaminobutyric acid,  $\alpha$ -amino isobutyric acid, 4-aminobutyric acid, Abu, 2-amino butyric acid,  $\gamma$ -Abu, e-Ahx, 6-amino hexanoic acid, Aib, 2-amino isobutyric acid, 3-amino propionic acid, ornithine, norleucine, norvaline, hydroxyproline, sarcosine, citrulline, homocitrulline, cysteic acid, t-butylglycine, t-

butylalanine, phenylglycine, cyclohexylalanine, b-alanine, fluoro-amino acids, designer amino acids such as b-methyl amino acids, Ca-methyl amino acids, Na-methyl amino acids, and amino acid analogs in general. Furthermore, the amino acid can be D (dextrorotary) or L (levorotary).

**[0186]** The invention encompasses polypeptides of the present invention which are differentially modified during or after translation, e.g., by glycosylation, acetylation, phosphorylation, amidation, derivatization by known protecting/blocking groups, proteolytic cleavage, linkage to an antibody molecule or other cellular ligand, etc. Any of numerous chemical modifications may be carried out by known techniques, including but not limited, to specific chemical cleavage by cyanogen bromide, trypsin, chymotrypsin, papain, V8 protease, NaBH<sub>4</sub>; acetylation, formylation, oxidation, reduction; metabolic synthesis in the presence of tunicamycin; etc.

**[0187]** Additional post-translational modifications encompassed by the invention include, for example, e.g., N-linked or O-linked carbohydrate chains, processing of N-terminal or C-terminal ends), attachment of chemical moieties to the amino acid backbone, chemical modifications of N-linked or O-linked carbohydrate chains, and addition or deletion of an N-terminal methionine residue as a result of procaryotic host cell expression. The polypeptides may also be modified with a detectable label, such as an enzymatic, fluorescent, isotopic or affinity label to allow for detection and isolation of the protein.

**[0188]** Examples of suitable enzymes include horseradish peroxidase, alkaline phosphatase, beta-galactosidase, or acetylcholinesterase; examples of suitable prosthetic group complexes include streptavidin/biotin and avidin/biotin; examples of suitable fluorescent materials include umbelliferone, fluorescein, fluorescein isothiocyanate, rhodamine, dichlorotriazinylamine fluorescein, dansyl chloride or phycoerythrin; an example of a luminescent material includes luminol; examples of bioluminescent materials include luciferase, luciferin, and aequorin; and examples of suitable radioactive material include iodine (<sup>121</sup>I, <sup>123</sup>I, <sup>125</sup>I, <sup>131</sup>I), carbon (<sup>14</sup>C), sulfur (<sup>35</sup>S), tritium (<sup>3</sup>H), indium (<sup>111</sup>In, <sup>112</sup>In, <sup>113m</sup>In, <sup>115m</sup>In), technetium (<sup>99</sup>Tc, <sup>99m</sup>Tc), thallium (<sup>201</sup>Tl), gallium (<sup>68</sup>Ga, <sup>67</sup>Ga), palladium (<sup>103</sup>Pd), molybdenum (<sup>99</sup>Mo), xenon (<sup>133</sup>Xe), fluorine (<sup>18</sup>F), <sup>153</sup>Sm, <sup>177</sup>Lu, <sup>159</sup>Gd, <sup>149</sup>Pm, <sup>140</sup>La, <sup>175</sup>Yb, <sup>166</sup>Ho, <sup>90</sup>Y, <sup>47</sup>Sc, <sup>186</sup>Re, <sup>188</sup>Re, <sup>142</sup>Pr, <sup>105</sup>Rh, and <sup>97</sup>Ru.

[0189] In specific embodiments, a polypeptide of the present invention or fragment or variant thereof is attached to macrocyclic chelators that associate with radiometal ions, including but not limited to,  $^{177}\text{Lu}$ ,  $^{90}\text{Y}$ ,  $^{166}\text{Ho}$ , and  $^{153}\text{Sm}$ , to polypeptides. In a preferred embodiment, the radiometal ion associated with the macrocyclic chelators is  $^{111}\text{In}$ . In another preferred embodiment, the radiometal ion associated with the macrocyclic chelator is  $^{90}\text{Y}$ . In specific embodiments, the macrocyclic chelator is 1,4,7,10-tetraazacyclododecane- $\text{N,N',N'',N'''}\text{-tetraacetic acid}$  (DOTA). In other specific embodiments, DOTA is attached to an antibody of the invention or fragment thereof via a linker molecule. Examples of linker molecules useful for conjugating DOTA to a polypeptide are commonly known in the art - see, for example, DeNardo et al., Clin Cancer Res. 4(10):2483-90 (1998); Peterson et al., Bioconjug. Chem. 10(4):553-7 (1999); and Zimmerman et al, Nucl. Med. Biol. 26(8):943-50 (1999); which are hereby incorporated by reference in their entirety.

[0190] As mentioned, the immune/hematopoietic associated proteins of the invention may be modified by either natural processes, such as posttranslational processing, or by chemical modification techniques which are well known in the art. It will be appreciated that the same type of modification may be present in the same or varying degrees at several sites in a given immune/hematopoietic associated polypeptide. Immune/hematopoietic associated polypeptides may be branched, for example, as a result of ubiquitination, and they may be cyclic, with or without branching. Cyclic, branched, and branched cyclic immune/hematopoietic associated polypeptides may result from posttranslation natural processes or may be made by synthetic methods. Modifications include acetylation, acylation, ADP-ribosylation, amidation, covalent attachment of flavin, covalent attachment of a heme moiety, covalent attachment of a nucleotide or nucleotide derivative, covalent attachment of a lipid or lipid derivative, covalent attachment of phosphatidylinositol, cross-linking, cyclization, disulfide bond formation, demethylation, formation of covalent cross-links, formation of cysteine, formation of pyroglutamate, formylation, gamma-carboxylation, glycosylation, GPI anchor formation, hydroxylation, iodination, methylation, myristoylation, oxidation, pegylation, proteolytic processing, phosphorylation, prenylation, racemization, selenoylation, sulfation, transfer-RNA mediated addition of amino acids to proteins such as arginylation, and ubiquitination. (See, for instance, PROTEINS - STRUCTURE AND MOLECULAR PROPERTIES, 2nd

Ed., T. E. Creighton, W. H. Freeman and Company, New York (1993); POSTTRANSLATIONAL COVALENT MODIFICATION OF PROTEINS, B. C. Johnson, Ed., Academic Press, New York, pgs. 1-12 (1983); Seifter et al., *Meth. Enzymol.* 182:626-646 (1990); Rattan et al., *Ann. N.Y. Acad. Sci.* 663:48-62 (1992)).

[0191] Also provided by the invention are chemically modified derivatives of the polypeptides of the invention which may provide additional advantages such as increased solubility, stability and circulating time of the polypeptide, or decreased immunogenicity (see U.S. Patent No. 4,179,337). The chemical moieties for derivitization may be selected from water soluble polymers such as polyethylene glycol, ethylene glycol/propylene glycol copolymers, carboxymethylcellulose, dextran, polyvinyl alcohol and the like. The polypeptides may be modified at random positions within the molecule, or at predetermined positions within the molecule and may include one, two, three or more attached chemical moieties.

[0192] The polymer may be of any molecular weight, and may be branched or unbranched. For polyethylene glycol, the preferred molecular weight is between about 1 kDa and about 100 kDa (the term "about" indicating that in preparations of polyethylene glycol, some molecules will weigh more, some less, than the stated molecular weight) for ease in handling and manufacturing. Other sizes may be used, depending on the desired therapeutic profile (e.g., the duration of sustained release desired, the effects, if any on biological activity, the ease in handling, the degree or lack of antigenicity and other known effects of the polyethylene glycol to a therapeutic protein or analog). For example, the polyethylene glycol may have an average molecular weight of about 200, 500, 1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000, 5500, 6000, 6500, 7000, 7500, 8000, 8500, 9000, 9500, 10,000, 10,500, 11,000, 11,500, 12,000, 12,500, 13,000, 13,500, 14,000, 14,500, 15,000, 15,500, 16,000, 16,500, 17,000, 17,500, 18,000, 18,500, 19,000, 19,500, 20,000, 25,000, 30,000, 35,000, 40,000, 50,000, 55,000, 60,000, 65,000, 70,000, 75,000, 80,000, 85,000, 90,000, 95,000, or 100,000 kDa.

[0193] As noted above, the polyethylene glycol may have a branched structure. Branched polyethylene glycols are described, for example, in U.S. Patent No. 5,643,575; Morpurgo et al., *Appl. Biochem. Biotechnol.* 56:59-72 (1996); Vorobjev et al., *Nucleosides Nucleotides* 18:2745-2750 (1999); and Caliceti et al., *Bioconj. Chem.* 10:638-646 (1999), the disclosures of each of which are incorporated herein by reference.

[0194] . The polyethylene glycol molecules (or other chemical moieties) should be attached to the protein with consideration of effects on functional or antigenic domains of the protein. There are a number of attachment methods available to those skilled in the art, such as, for example, the method disclosed in EP 0 401 384 (coupling PEG to G-CSF), herein incorporated by reference; see also Malik et al., Exp. Hematol. 20:1028-1035 (1992), reporting pegylation of GM-CSF using tresyl chloride. For example, polyethylene glycol may be covalently bound through amino acid residues via a reactive group, such as a free amino or carboxyl group. Reactive groups are those to which an activated polyethylene glycol molecule may be bound. The amino acid residues having a free amino group may include lysine residues and the N-terminal amino acid residues; those having a free carboxyl group may include aspartic acid residues glutamic acid residues and the C-terminal amino acid residue. Sulfhydryl groups may also be used as a reactive group for attaching the polyethylene glycol molecules. Preferred for therapeutic purposes is attachment at an amino group, such as attachment at the N-terminus or lysine group.

[0195] As suggested above, polyethylene glycol may be attached to proteins via linkage to any of a number of amino acid residues. For example, polyethylene glycol can be linked to proteins via covalent bonds to lysine, histidine, aspartic acid, glutamic acid, or cysteine residues. One or more reaction chemistries may be employed to attach polyethylene glycol to specific amino acid residues (e.g., lysine, histidine, aspartic acid, glutamic acid, or cysteine) of the protein or to more than one type of amino acid residue (e.g., lysine, histidine, aspartic acid, glutamic acid, cysteine and combinations thereof) of the protein.

[0196] One may specifically desire proteins chemically modified at the N-terminus. Using polyethylene glycol as an illustration of the present composition, one may select from a variety of polyethylene glycol molecules (by molecular weight, branching, etc.), the proportion of polyethylene glycol molecules to protein (polypeptide) molecules in the reaction mix, the type of pegylation reaction to be performed, and the method of obtaining the selected N-terminally pegylated protein. The method of obtaining the N-terminally pegylated preparation (i.e., separating this moiety from other monopegylated moieties if necessary) may be by purification of the N-terminally pegylated material from a population of pegylated protein molecules. Selective proteins chemically modified at the N-terminus modification may be accomplished by reductive alkylation which exploits differential reactivity of different types of primary amino groups (lysine versus the

N-terminal) available for derivatization in a particular protein. Under the appropriate reaction conditions, substantially selective derivatization of the protein at the N-terminus with a carbonyl group containing polymer is achieved.

[0197] As indicated above, pegylation of the proteins of the invention may be accomplished by any number of means. For example, polyethylene glycol may be attached to the protein either directly or by an intervening linker. Linkerless systems for attaching polyethylene glycol to proteins are described in Delgado et al., *Crit. Rev. Thera. Drug Carrier Sys.* 9:249-304 (1992); Francis et al., *Intern. J. of Hematol.* 68:1-18 (1998); U.S. Patent No. 4,002,531; U.S. Patent No. 5,349,052; WO 95/06058; and WO 98/32466, the disclosures of each of which are incorporated herein by reference.

[0198] One system for attaching polyethylene glycol directly to amino acid residues of proteins without an intervening linker employs tresylated MPEG, which is produced by the modification of monmethoxy polyethylene glycol (MPEG) using tresylchloride ( $\text{ClSO}_2\text{CH}_2\text{CF}_3$ ). Upon reaction of protein with tresylated MPEG, polyethylene glycol is directly attached to amine groups of the protein. Thus, the invention includes protein-polyethylene glycol conjugates produced by reacting proteins of the invention with a polyethylene glycol molecule having a 2,2,2-trifluoroethane sulphonyl group.

[0199] Polyethylene glycol can also be attached to proteins using a number of different intervening linkers. For example, U.S. Patent No. 5,612,460, the entire disclosure of which is incorporated herein by reference, discloses urethane linkers for connecting polyethylene glycol to proteins. Protein-polyethylene glycol conjugates wherein the polyethylene glycol is attached to the protein by a linker can also be produced by reaction of proteins with compounds such as MPEG-succinimidylsuccinate, MPEG activated with 1,1'-carbonyldiimidazole, MPEG-2,4,5-trichloropentylcarbonate, MPEG-p-nitrophenolcarbonate, and various MPEG-succinate derivatives. A number of additional polyethylene glycol derivatives and reaction chemistries for attaching polyethylene glycol to proteins are described in International Publication No. WO 98/32466, the entire disclosure of which is incorporated herein by reference. Pegylated protein products produced using the reaction chemistries set out herein are included within the scope of the invention.

[0200] The number of polyethylene glycol moieties attached to each protein of the invention (i.e., the degree of substitution) may also vary. For example, the pegylated

proteins of the invention may be linked, on average, to 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 17, 20, or more polyethylene glycol molecules. Similarly, the average degree of substitution within ranges such as 1-3, 2-4, 3-5, 4-6, 5-7, 6-8, 7-9, 8-10, 9-11, 10-12, 11-13, 12-14, 13-15, 14-16, 15-17, 16-18, 17-19, or 18-20 polyethylene glycol moieties per protein molecule. Methods for determining the degree of substitution are discussed, for example, in Delgado et al., Crit. Rev. Thera. Drug Carrier Sys. 9:249-304 (1992).

**[0201]** The immune/hematopoietic associated polypeptides of the invention can be recovered and purified from chemical synthesis and recombinant cell cultures by standard methods which include, but are not limited to, ammonium sulfate or ethanol precipitation, acid extraction, anion or cation exchange chromatography, phosphocellulose chromatography, hydrophobic interaction chromatography, affinity chromatography, hydroxylapatite chromatography and lectin chromatography. Most preferably, high performance liquid chromatography ("HPLC") is employed for purification. Well known techniques for refolding protein may be employed to regenerate active conformation when the polypeptide is denatured during isolation and/or purification.

**[0202]** Immune/hematopoietic associated polynucleotides and polypeptides may be used in accordance with the present invention for a variety of applications, particularly those that make use of the chemical and biological properties of immune/hematopoietic associated antigens. Among these are applications in the detection, prevention, diagnosis and/or treatment of diseases associated with hematopoiesis and/or the immune system, such as e.g., cancers and tumors of hematopoietic cells as well as diseases and disorders of/associated with hematopoiesis or the immune system (such as anemias, autoimmune diseases, immunodeficiencies, allergies, asthma, and inflammation) and infectious/parasitic diseases. Additional applications relate to diagnosis and to treatment of disorders of cells, tissues and organisms. These aspects of the invention are discussed further below.

**[0203]** In a preferred embodiment, polynucleotides expressed in a particular tissue type (see, e.g., Table 1A, column 7) are used to detect, diagnose, treat, prevent and/or prognose disorders associated with the tissue type.

**[0204]** The polypeptides of the invention may be in monomers or multimers (i.e., dimers, trimers, tetramers and higher multimers). Accordingly, the present invention relates to monomers and multimers of the polypeptides of the invention, their preparation,

and compositions (preferably, Therapeutics) containing them. In specific embodiments, the polypeptides of the invention are monomers, dimers, trimers or tetramers. In additional embodiments, the multimers of the invention are at least dimers, at least trimers, or at least tetramers.

[0205] Multimers encompassed by the invention may be homomers or heteromers. As used herein, the term homomer refers to a multimer containing only polypeptides corresponding to a protein of the invention (e.g., the amino acid sequence of SEQ ID NO:Y, an amino acid sequence encoded by SEQ ID NO:X or the complement of SEQ ID NO:X, the amino acid sequence encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, and/or an amino acid sequence encoded by cDNA contained in Clone ID NO:Z (including fragments, variants, splice variants, and fusion proteins, corresponding to these as described herein)). These homomers may contain polypeptides having identical or different amino acid sequences. In a specific embodiment, a homomer of the invention is a multimer containing only polypeptides having an identical amino acid sequence. In another specific embodiment, a homomer of the invention is a multimer containing polypeptides having different amino acid sequences. In specific embodiments, the multimer of the invention is a homodimer (e.g., containing two polypeptides having identical or different amino acid sequences) or a homotrimer (e.g., containing three polypeptides having identical and/or different amino acid sequences). In additional embodiments, the homomeric multimer of the invention is at least a homodimer, at least a homotrimer, or at least a homotetramer.

[0206] As used herein, the term heteromer refers to a multimer containing two or more heterologous polypeptides (i.e., polypeptides of different proteins) in addition to the polypeptides of the invention. In a specific embodiment, the multimer of the invention is a heterodimer, a heterotrimer, or a heterotetramer. In additional embodiments, the heteromeric multimer of the invention is at least a heterodimer, at least a heterotrimer, or at least a heterotetramer.

[0207] Multimers of the invention may be the result of hydrophobic, hydrophilic, ionic and/or covalent associations and/or may be indirectly linked by, for example, liposome formation. Thus, in one embodiment, multimers of the invention, such as, for example, homodimers or homotrimers, are formed when polypeptides of the invention contact one another in solution. In another embodiment, heteromultimers of the invention, such as, for



example, heterotrimers or heterotetramers, are formed when polypeptides of the invention contact antibodies to the polypeptides of the invention (including antibodies to the heterologous polypeptide sequence in a fusion protein of the invention) in solution. In other embodiments, multimers of the invention are formed by covalent associations with and/or between the polypeptides of the invention. Such covalent associations may involve one or more amino acid residues contained in the polypeptide sequence (e.g., that recited in SEQ ID NO:Y, encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, and/or encoded by the cDNA contained in Clone ID NO:Z). In one instance, the covalent associations are cross-linking between cysteine residues located within the polypeptide sequences which interact in the native (i.e., naturally occurring) polypeptide. In another instance, the covalent associations are the consequence of chemical or recombinant manipulation. Alternatively, such covalent associations may involve one or more amino acid residues contained in the heterologous polypeptide sequence in a fusion protein. In one example, covalent associations are between the heterologous sequence contained in a fusion protein of the invention (see, e.g., U.S. Patent Number 5,478,925). In a specific example, the covalent associations are between the heterologous sequence contained in a Fc fusion protein of the invention (as described herein). In another specific example, covalent associations of fusion proteins of the invention are between heterologous polypeptide sequence from another protein that is capable of forming covalently associated multimers, such as for example, osteoprotegerin (see, e.g., International Publication NO: WO 98/49305, the contents of which are herein incorporated by reference in its entirety). In another embodiment, two or more polypeptides of the invention are joined through peptide linkers. Examples include those peptide linkers described in U.S. Pat. No. 5,073,627 (hereby incorporated by reference). Proteins comprising multiple polypeptides of the invention separated by peptide linkers may be produced using conventional recombinant DNA technology.

[0208] Another method for preparing multimer polypeptides of the invention involves use of polypeptides of the invention fused to a leucine zipper or isoleucine zipper polypeptide sequence. Leucine zipper and isoleucine zipper domains are polypeptides that promote multimerization of the proteins in which they are found. Leucine zippers were originally identified in several DNA-binding proteins (Landschulz et al., Science 240:1759, (1988)), and have since been found in a variety of different proteins. Among

the known leucine zippers are naturally occurring peptides and derivatives thereof that dimerize or trimerize. Examples of leucine zipper domains suitable for producing soluble multimeric proteins of the invention are those described in PCT application WO 94/10308, hereby incorporated by reference. Recombinant fusion proteins comprising a polypeptide of the invention fused to a polypeptide sequence that dimerizes or trimerizes in solution are expressed in suitable host cells, and the resulting soluble multimeric fusion protein is recovered from the culture supernatant using techniques known in the art.

[0209] Trimeric polypeptides of the invention may offer the advantage of enhanced biological activity. Preferred leucine zipper moieties and isoleucine moieties are those that preferentially form trimers. One example is a leucine zipper derived from lung surfactant protein D (SPD), as described in Hoppe et al. (FEBS Letters 344:191, (1994)) and in U.S. patent application Ser. No. 08/446,922, hereby incorporated by reference. Other peptides derived from naturally occurring trimeric proteins may be employed in preparing trimeric polypeptides of the invention.

[0210] In another example, proteins of the invention are associated by interactions between Flag® polypeptide sequence contained in fusion proteins of the invention containing Flag® polypeptide sequence. In a further embodiment, proteins of the invention are associated by interactions between heterologous polypeptide sequence contained in Flag® fusion proteins of the invention and anti-Flag® antibody.

[0211] The multimers of the invention may be generated using chemical techniques known in the art. For example, polypeptides desired to be contained in the multimers of the invention may be chemically cross-linked using linker molecules and linker molecule length optimization techniques known in the art (see, e.g., U.S. Patent Number 5,478,925, which is herein incorporated by reference in its entirety). Additionally, multimers of the invention may be generated using techniques known in the art to form one or more inter-molecule cross-links between the cysteine residues located within the sequence of the polypeptides desired to be contained in the multimer (see, e.g., U.S. Patent Number 5,478,925, which is herein incorporated by reference in its entirety). Further, polypeptides of the invention may be routinely modified by the addition of cysteine or biotin to the C-terminus or N-terminus of the polypeptide and techniques known in the art may be applied to generate multimers containing one or more of these modified polypeptides (see, e.g., U.S. Patent Number 5,478,925, which is herein incorporated by reference in its entirety).

Additionally, techniques known in the art may be applied to generate liposomes containing the polypeptide components desired to be contained in the multimer of the invention (see, e.g., U.S. Patent Number 5,478,925, which is herein incorporated by reference in its entirety).

[0212] Alternatively, multimers of the invention may be generated using genetic engineering techniques known in the art. In one embodiment, polypeptides contained in multimers of the invention are produced recombinantly using fusion protein technology described herein or otherwise known in the art (see, e.g., U.S. Patent Number 5,478,925, which is herein incorporated by reference in its entirety). In a specific embodiment, polynucleotides coding for a homodimer of the invention are generated by ligating a polynucleotide sequence encoding a polypeptide of the invention to a sequence encoding a linker polypeptide and then further to a synthetic polynucleotide encoding the translated product of the polypeptide in the reverse orientation from the original C-terminus to the N-terminus (lacking the leader sequence) (see, e.g., U.S. Patent Number 5,478,925, which is herein incorporated by reference in its entirety). In another embodiment, recombinant techniques described herein or otherwise known in the art are applied to generate recombinant polypeptides of the invention which contain a transmembrane domain (or hydrophobic or signal peptide) and which can be incorporated by membrane reconstitution techniques into liposomes (see, e.g., U.S. Patent Number 5,478,925, which is herein incorporated by reference in its entirety).

### **Antibodies**

[0213] Further polypeptides of the invention relate to antibodies and T-cell antigen receptors (TCR) which immunospecifically bind a polypeptide, polypeptide fragment, or variant of the invention (e.g., a polypeptide or fragment or variant of the amino acid sequence of SEQ ID NO:Y or a polypeptide encoded by the cDNA contained in Clone ID NO:Z, and/or an epitope, of the present invention) as determined by immunoassays well known in the art for assaying specific antibody-antigen binding. Antibodies of the invention include, but are not limited to, polyclonal, monoclonal, multispecific, human, humanized or chimeric antibodies, single chain antibodies, Fab fragments, F(ab') fragments, fragments produced by a Fab expression library, anti-idiotypic (anti-Id) antibodies (including, e.g., anti-Id antibodies to antibodies of the invention),

intracellularly-made antibodies (i.e., intrabodies), and epitope-binding fragments of any of the above. The term "antibody," as used herein, refers to immunoglobulin molecules and immunologically active portions of immunoglobulin molecules, i.e., molecules that contain an antigen binding site that immunospecifically binds an antigen. The immunoglobulin molecules of the invention can be of any type (e.g., IgG, IgE, IgM, IgD, IgA and IgY), class (e.g., IgG1, IgG2, IgG3, IgG4, IgA1 and IgA2) or subclass of immunoglobulin molecule. In preferred embodiments, the immunoglobulin molecules of the invention are IgG1. In other preferred embodiments, the immunoglobulin molecules of the invention are IgG4.

[0214] Most preferably the antibodies are human antigen-binding antibody fragments of the present invention and include, but are not limited to, Fab, Fab' and F(ab')<sub>2</sub>, Fd, single-chain Fvs (scFv), single-chain antibodies, disulfide-linked Fvs (sdFv) and fragments comprising either a VL or VH domain. Antigen-binding antibody fragments, including single-chain antibodies, may comprise the variable region(s) alone or in combination with the entirety or a portion of the following: hinge region, CH1, CH2, and CH3 domains. Also included in the invention are antigen-binding fragments also comprising any combination of variable region(s) with a hinge region, CH1, CH2, and CH3 domains. The antibodies of the invention may be from any animal origin including birds and mammals. Preferably, the antibodies are human, murine (e.g., mouse and rat), donkey, sheep, rabbit, goat, guinea pig, camel, horse, or chicken. As used herein, "human" antibodies include antibodies having the amino acid sequence of a human immunoglobulin and include antibodies isolated from human immunoglobulin libraries or from animals transgenic for one or more human immunoglobulin and that do not express endogenous immunoglobulins, as described *infra* and, for example in, U.S. Patent No. 5,939,598 by Kucherlapati et al.

[0215] The antibodies of the present invention may be monospecific, bispecific, trispecific or of greater multispecificity. Multispecific antibodies may be specific for different epitopes of a polypeptide of the present invention or may be specific for both a polypeptide of the present invention as well as for a heterologous epitope, such as a heterologous polypeptide or solid support material. See, e.g., PCT publications WO 93/17715; WO 92/08802; WO 91/00360; WO 92/05793; Tutt, et al., J. Immunol. 147:60-

69 (1991); U.S. Patent Nos. 4,474,893; 4,714,681; 4,925,648; 5,573,920; 5,601,819; Kostelny et al., J. Immunol. 148:1547-1553 (1992).

[0216] Antibodies of the present invention may be described or specified in terms of the epitope(s) or portion(s) of a polypeptide of the present invention which they recognize or specifically bind. The epitope(s) or polypeptide portion(s) may be specified as described herein, e.g., by N-terminal and C-terminal positions, or by size in contiguous amino acid residues, or listed in the Tables and Figures. Preferred epitopes of the invention include those shown in column 6 of Table 1A, as well as polynucleotides that encode these epitopes. Antibodies which specifically bind any epitope or polypeptide of the present invention may also be excluded. Therefore, the present invention includes antibodies that specifically bind polypeptides of the present invention, and allows for the exclusion of the same.

[0217] Antibodies of the present invention may also be described or specified in terms of their cross-reactivity. Antibodies that do not bind any other analog, ortholog, or homolog of a polypeptide of the present invention are included. Antibodies that bind polypeptides with at least 95%, at least 90%, at least 85%, at least 80%, at least 75%, at least 70%, at least 65%, at least 60%, at least 55%, and at least 50% identity (as calculated using methods known in the art and described herein) to a polypeptide of the present invention are also included in the present invention. In specific embodiments, antibodies of the present invention cross-react with murine, rat and/or rabbit homologs of human proteins and the corresponding epitopes thereof. Antibodies that do not bind polypeptides with less than 95%, less than 90%, less than 85%, less than 80%, less than 75%, less than 70%, less than 65%, less than 60%, less than 55%, and less than 50% identity (as calculated using methods known in the art and described herein) to a polypeptide of the present invention are also included in the present invention. In a specific embodiment, the above-described cross-reactivity is with respect to any single specific antigenic or immunogenic polypeptide, or combination(s) of 2, 3, 4, 5, or more of the specific antigenic and/or immunogenic polypeptides disclosed herein. Further included in the present invention are antibodies which bind polypeptides encoded by polynucleotides which hybridize to a polynucleotide of the present invention under stringent hybridization conditions (as described herein). Antibodies of the present invention may also be described or specified in terms of their binding affinity to a polypeptide of the invention.

Preferred binding affinities include those with a dissociation constant or  $K_d$  less than  $5 \times 10^{-2}$  M,  $10^{-2}$  M,  $5 \times 10^{-3}$  M,  $10^{-3}$  M,  $5 \times 10^{-4}$  M,  $10^{-4}$  M,  $5 \times 10^{-5}$  M,  $10^{-5}$  M,  $5 \times 10^{-6}$  M,  $10^{-6}$  M,  $5 \times 10^{-7}$  M,  $10^{-7}$  M,  $5 \times 10^{-8}$  M,  $10^{-8}$  M,  $5 \times 10^{-9}$  M,  $10^{-9}$  M,  $5 \times 10^{-10}$  M,  $10^{-10}$  M,  $5 \times 10^{-11}$  M,  $10^{-11}$  M,  $5 \times 10^{-12}$  M,  $10^{-12}$  M,  $5 \times 10^{-13}$  M,  $10^{-13}$  M,  $5 \times 10^{-14}$  M,  $10^{-14}$  M,  $5 \times 10^{-15}$  M, or  $10^{-15}$  M.

[0218] The invention also provides antibodies that competitively inhibit binding of an antibody to an epitope of the invention as determined by any method known in the art for determining competitive binding, for example, the immunoassays described herein. In preferred embodiments, the antibody competitively inhibits binding to the epitope by at least 95%, at least 90%, at least 85 %, at least 80%, at least 75%, at least 70%, at least 60%, or at least 50%.

[0219] Antibodies of the present invention may act as agonists or antagonists of the polypeptides of the present invention. For example, the present invention includes antibodies which disrupt the receptor/ligand interactions with the polypeptides of the invention either partially or fully. Preferably, antibodies of the present invention bind an antigenic epitope disclosed herein, or a portion thereof. The invention features both receptor-specific antibodies and ligand-specific antibodies. The invention also features receptor-specific antibodies which do not prevent ligand binding but prevent receptor activation. Receptor activation (i.e., signaling) may be determined by techniques described herein or otherwise known in the art. For example, receptor activation can be determined by detecting the phosphorylation (e.g., tyrosine or serine/threonine) of the receptor or its substrate by immunoprecipitation followed by western blot analysis (for example, as described *supra*). In specific embodiments, antibodies are provided that inhibit ligand activity or receptor activity by at least 95%, at least 90%, at least 85%, at least 80%, at least 75%, at least 70%, at least 60%, or at least 50% of the activity in absence of the antibody.

[0220] The invention also features receptor-specific antibodies which both prevent ligand binding and receptor activation as well as antibodies that recognize the receptor-ligand complex, and, preferably, do not specifically recognize the unbound receptor or the unbound ligand. Likewise, included in the invention are neutralizing antibodies which bind the ligand and prevent binding of the ligand to the receptor, as well as antibodies which bind the ligand, thereby preventing receptor activation, but do not prevent the

ligand from binding the receptor. Further included in the invention are antibodies which activate the receptor. These antibodies may act as receptor agonists, i.e., potentiate or activate either all or a subset of the biological activities of the ligand-mediated receptor activation, for example, by inducing dimerization of the receptor. The antibodies may be specified as agonists, antagonists or inverse agonists for biological activities comprising the specific biological activities of the peptides of the invention disclosed herein. The above antibody agonists can be made using methods known in the art. See, e.g., PCT publication WO 96/40281; U.S. Patent No. 5,811,097; Deng et al., Blood 92(6):1981-1988 (1998); Chen et al., Cancer Res. 58(16):3668-3678 (1998); Harrop et al., J. Immunol. 161(4):1786-1794 (1998); Zhu et al., Cancer Res. 58(15):3209-3214 (1998); Yoon et al., J. Immunol. 160(7):3170-3179 (1998); Prat et al., J. Cell. Sci. 111(Pt2):237-247 (1998); Pitard et al., J. Immunol. Methods 205(2):177-190 (1997); Liautard et al., Cytokine 9(4):233-241 (1997); Carlson et al., J. Biol. Chem. 272(17):11295-11301 (1997); Taryman et al., Neuron 14(4):755-762 (1995); Muller et al., Structure 6(9):1153-1167 (1998); Bartunek et al., Cytokine 8(1):14-20 (1996) (which are all incorporated by reference herein in their entireties).

[0221] Antibodies of the present invention may be used, for example, to purify, detect, and target the polypeptides of the present invention, including both *in vitro* and *in vivo* diagnostic and therapeutic methods. For example, the antibodies have utility in immunoassays for qualitatively and quantitatively measuring levels of the polypeptides of the present invention in biological samples. See, e.g., Harlow et al., Antibodies: A Laboratory Manual, (Cold Spring Harbor Laboratory Press, 2nd ed. 1988); incorporated by reference herein in its entirety.

[0222] As discussed in more detail below, the antibodies of the present invention may be used either alone or in combination with other compositions. The antibodies may further be recombinantly fused to a heterologous polypeptide at the N- or C-terminus or chemically conjugated (including covalent and non-covalent conjugations) to polypeptides or other compositions. For example, antibodies of the present invention may be recombinantly fused or conjugated to molecules useful as labels in detection assays and effector molecules such as heterologous polypeptides, drugs, radionuclides, or toxins. See, e.g., PCT publications WO 92/08495; WO 91/14438; WO 89/12624; U.S. Patent No.

5,314,995; and EP 396,387; the disclosures of which are incorporated herein by reference in their entireties.

[0223] The antibodies of the invention include derivatives that are modified, i.e., by the covalent attachment of any type of molecule to the antibody such that covalent attachment does not prevent the antibody from generating an anti-idiotypic response. For example, but not by way of limitation, the antibody derivatives include antibodies that have been modified, e.g., by glycosylation, acetylation, pegylation, phosphorylation, amidation, derivatization by known protecting/blocking groups, proteolytic cleavage, linkage to a cellular ligand or other protein, etc. Any of numerous chemical modifications may be carried out by known techniques, including, but not limited to specific chemical cleavage, acetylation, formylation, metabolic synthesis of tunicamycin, etc. Additionally, the derivative may contain one or more non-classical amino acids.

[0224] The antibodies of the present invention may be generated by any suitable method known in the art. Polyclonal antibodies to an antigen-of-interest can be produced by various procedures well known in the art. For example, a polypeptide of the invention can be administered to various host animals including, but not limited to, rabbits, mice, rats, etc. to induce the production of sera containing polyclonal antibodies specific for the antigen. Various adjuvants may be used to increase the immunological response, depending on the host species, and include but are not limited to, Freund's (complete and incomplete), mineral gels such as aluminum hydroxide, surface active substances such as lysolecithin, pluronic polyols, polyanions, peptides, oil emulsions, keyhole limpet hemocyanins, dinitrophenol, and potentially useful human adjuvants such as BCG (bacille Calmette-Guerin) and corynebacterium parvum. Such adjuvants are also well known in the art.

[0225] Monoclonal antibodies can be prepared using a wide variety of techniques known in the art including the use of hybridoma, recombinant, and phage display technologies, or a combination thereof. For example, monoclonal antibodies can be produced using hybridoma techniques including those known in the art and taught, for example, in Harlow et al., *Antibodies: A Laboratory Manual*, (Cold Spring Harbor Laboratory Press, 2nd ed. 1988); Hammerling, et al., in: *Monoclonal Antibodies and T-Cell Hybridomas* 563-681 (Elsevier, N.Y., 1981) (said references incorporated by reference in their entireties). The term "monoclonal antibody" as used herein is not



limited to antibodies produced through hybridoma technology. The term "monoclonal antibody" refers to an antibody that is derived from a single clone, including any eukaryotic, prokaryotic, or phage clone, and not the method by which it is produced.

[0226] Methods for producing and screening for specific antibodies using hybridoma technology are routine and well known in the art and are discussed in detail in the Examples. In a non-limiting example, mice can be immunized with a polypeptide of the invention or a cell expressing such peptide. Once an immune response is detected, e.g., antibodies specific for the antigen are detected in the mouse serum, the mouse spleen is harvested and splenocytes isolated. The splenocytes are then fused by well known techniques to any suitable myeloma cells, for example cells from cell line SP20 available from the ATCC. Hybridomas are selected and cloned by limited dilution. The hybridoma clones are then assayed by methods known in the art for cells that secrete antibodies capable of binding a polypeptide of the invention. Ascites fluid, which generally contains high levels of antibodies, can be generated by immunizing mice with positive hybridoma clones.

[0227] Accordingly, the present invention provides methods of generating monoclonal antibodies as well as antibodies produced by the method comprising culturing a hybridoma cell secreting an antibody of the invention wherein, preferably, the hybridoma is generated by fusing splenocytes isolated from a mouse immunized with an antigen of the invention with myeloma cells and then screening the hybridomas resulting from the fusion for hybridoma clones that secrete an antibody able to bind a polypeptide of the invention.

[0228] Another well known method for producing both polyclonal and monoclonal human B cell lines is transformation using Epstein Barr Virus (EBV). Protocols for generating EBV-transformed B cell lines are commonly known in the art, such as, for example, the protocol outlined in Chapter 7.22 of Current Protocols in Immunology, Coligan et al., Eds., 1994, John Wiley & Sons, NY, which is hereby incorporated in its entirety by reference herein. The source of B cells for transformation is commonly human peripheral blood, but B cells for transformation may also be derived from other sources including, but not limited to, lymph nodes, tonsil, spleen, tumor tissue, and infected tissues. Tissues are generally made into single cell suspensions prior to EBV transformation. Additionally, steps may be taken to either physically remove or inactivate

T cells (e.g., by treatment with cyclosporin A) in B cell-containing samples, because T cells from individuals seropositive for anti-EBV antibodies can suppress B cell immortalization by EBV.

[0229] In general, the sample containing human B cells is inoculated with EBV, and cultured for 3-4 weeks. A typical source of EBV is the culture supernatant of the B95-8 cell line (ATCC #VR-1492). Physical signs of EBV transformation can generally be seen towards the end of the 3-4 week culture period. By phase-contrast microscopy, transformed cells may appear large, clear, hairy and tend to aggregate in tight clusters of cells. Initially, EBV lines are generally polyclonal. However, over prolonged periods of cell cultures, EBV lines may become monoclonal or polyclonal as a result of the selective outgrowth of particular B cell clones. Alternatively, polyclonal EBV transformed lines may be subcloned (e.g., by limiting dilution culture) or fused with a suitable fusion partner and plated at limiting dilution to obtain monoclonal B cell lines. Suitable fusion partners for EBV transformed cell lines include mouse myeloma cell lines (e.g., SP2/0, X63-Ag8.653), heteromyeloma cell lines (human x mouse; e.g., SPAM-8, SBC-H20, and CB-F7), and human cell lines (e.g., GM 1500, SKO-007, RPMI 8226, and KR-4). Thus, the present invention also provides a method of generating polyclonal or monoclonal human antibodies against polypeptides of the invention or fragments thereof, comprising EBV-transformation of human B cells.

[0230] Antibody fragments which recognize specific epitopes may be generated by known techniques. For example, Fab and F(ab')<sub>2</sub> fragments of the invention may be produced by proteolytic cleavage of immunoglobulin molecules, using enzymes such as papain (to produce Fab fragments) or pepsin (to produce F(ab')<sub>2</sub> fragments). F(ab')<sub>2</sub> fragments contain the variable region, the light chain constant region and the CH1 domain of the heavy chain. For example, the antibodies of the present invention can also be generated using various phage display methods known in the art and as discussed in detail in the Examples (e.g., Example 10). In phage display methods, functional antibody domains are displayed on the surface of phage particles which carry the polynucleotide sequences encoding them. In a particular embodiment, such phage can be utilized to display antigen binding domains expressed from a repertoire or combinatorial antibody library (e.g., human or murine). Phage expressing an antigen binding domain that binds the antigen of interest can be selected or identified with antigen, e.g., using labeled antigen

or antigen bound or captured to a solid surface or bead. Phage used in these methods are typically filamentous phage including fd and M13 binding domains expressed from phage with Fab, Fv or disulfide stabilized Fv antibody domains recombinantly fused to either the phage gene III or gene VIII protein. Examples of phage display methods that can be used to make the antibodies of the present invention include those disclosed in Brinkman et al., J. Immunol. Methods 182:41-50 (1995); Ames et al., J. Immunol. Methods 184:177-186 (1995); Kettleborough et al., Eur. J. Immunol. 24:952-958 (1994); Persic et al., Gene 187 9-18 (1997); Burton et al., Advances in Immunology 57:191-280 (1994); PCT application No. PCT/GB91/01134; PCT publications WO 90/02809; WO 91/10737; WO 92/01047; WO 92/18619; WO 93/11236; WO 95/15982; WO 95/20401; and U.S. Patent Nos. 5,698,426; 5,223,409; 5,403,484; 5,580,717; 5,427,908; 5,750,753; 5,821,047; 5,571,698; 5,427,908; 5,516,637; 5,780,225; 5,658,727; 5,733,743 and 5,969,108; each of which is incorporated herein by reference in its entirety.

[0231] As described in the above references, after phage selection, the antibody coding regions from the phage can be isolated and used to generate whole antibodies, including human antibodies, or any other desired antigen binding fragment, and expressed in any desired host, including mammalian cells, insect cells, plant cells, yeast, and bacteria, e.g., as described in detail below. For example, techniques to recombinantly produce Fab, Fab' and F(ab')<sub>2</sub> fragments can also be employed using methods known in the art such as those disclosed in PCT publication WO 92/22324; Mullinax et al., BioTechniques 12(6):864-869 (1992); and Sawai et al., AJRI 34:26-34 (1995); and Better et al., Science 240:1041-1043 (1988) (said references incorporated by reference in their entireties).

[0232] Examples of techniques which can be used to produce single-chain Fvs and antibodies include those described in U.S. Patents 4,946,778 and 5,258,498; Huston et al., Methods in Enzymology 203:46-88 (1991); Shu et al., PNAS 90:7995-7999 (1993); and Skerra et al., Science 240:1038-1040 (1988). For some uses, including *in vivo* use of antibodies in humans and *in vitro* detection assays, it may be preferable to use chimeric, humanized, or human antibodies. A chimeric antibody is a molecule in which different portions of the antibody are derived from different animal species, such as antibodies having a variable region derived from a murine monoclonal antibody and a human immunoglobulin constant region. Methods for producing chimeric antibodies are known

in the art. See e.g., Morrison, Science 229:1202 (1985); Oi et al., BioTechniques 4:214 (1986); Gillies et al., (1989) J. Immunol. Methods 125:191-202; U.S. Patent Nos. 5,807,715; 4,816,567; and 4,816,397, which are incorporated herein by reference in their entirety. Humanized antibodies are antibody molecules from non-human species antibody that binds the desired antigen having one or more complementarity determining regions (CDRs) from the non-human species and a framework regions from a human immunoglobulin molecule. Often, framework residues in the human framework regions will be substituted with the corresponding residue from the CDR donor antibody to alter, preferably improve, antigen binding. These framework substitutions are identified by methods well known in the art, e.g., by modeling of the interactions of the CDR and framework residues to identify framework residues important for antigen binding and sequence comparison to identify unusual framework residues at particular positions. (See, e.g., Queen et al., U.S. Patent No. 5,585,089; Riechmann et al., Nature 332:323 (1988), which are incorporated herein by reference in their entirety.) Antibodies can be humanized using a variety of techniques known in the art including, for example, CDR-grafting (EP 239,400; PCT publication WO 91/09967; U.S. Patent Nos. 5,225,539; 5,530,101; and 5,585,089), veneering or resurfacing (EP 592,106; EP 519,596; Padlan, Molecular Immunology 28(4/5):489-498 (1991); Studnicka et al., Protein Engineering 7(6):805-814 (1994); Roguska. et al., PNAS 91:969-973 (1994)), and chain shuffling (U.S. Patent No. 5,565,332).

[0233] Completely human antibodies are particularly desirable for therapeutic treatment of human patients. Human antibodies can be made by a variety of methods known in the art including phage display methods described above using antibody libraries derived from human immunoglobulin sequences. See also, U.S. Patent Nos. 4,444,887 and 4,716,111; and PCT publications WO 98/46645, WO 98/50433, WO 98/24893, WO 98/16654, WO 96/34096, WO 96/33735, and WO 91/10741; each of which is incorporated herein by reference in its entirety.

[0234] Human antibodies can also be produced using transgenic mice which are incapable of expressing functional endogenous immunoglobulins, but which can express human immunoglobulin genes. For example, the human heavy and light chain immunoglobulin gene complexes may be introduced randomly or by homologous recombination into mouse embryonic stem cells. Alternatively, the human variable

region, constant region, and diversity region may be introduced into mouse embryonic stem cells in addition to the human heavy and light chain genes. The mouse heavy and light chain immunoglobulin genes may be rendered non-functional separately or simultaneously with the introduction of human immunoglobulin loci by homologous recombination. In particular, homozygous deletion of the JH region prevents endogenous antibody production. The modified embryonic stem cells are expanded and microinjected into blastocysts to produce chimeric mice. The chimeric mice are then bred to produce homozygous offspring which express human antibodies. The transgenic mice are immunized in the normal fashion with a selected antigen, e.g., all or a portion of a polypeptide of the invention. Monoclonal antibodies directed against the antigen can be obtained from the immunized, transgenic mice using conventional hybridoma technology. The human immunoglobulin transgenes harbored by the transgenic mice rearrange during B cell differentiation, and subsequently undergo class switching and somatic mutation. Thus, using such a technique, it is possible to produce therapeutically useful IgG, IgA, IgM and IgE antibodies. For an overview of this technology for producing human antibodies, see Lonberg and Huszar, *Int. Rev. Immunol.* 13:65-93 (1995). For a detailed discussion of this technology for producing human antibodies and human monoclonal antibodies and protocols for producing such antibodies, see, e.g., PCT publications WO 98/24893; WO 92/01047; WO 96/34096; WO 96/33735; European Patent No. 0 598 877; U.S. Patent Nos. 5,413,923; 5,625,126; 5,633,425; 5,569,825; 5,661,016; 5,545,806; 5,814,318; 5,885,793; 5,916,771; 5,939,598; 6,075,181 and 6,114,598, which are incorporated by reference herein in their entirety. In addition, companies such as Abgenix, Inc. (Freemont, CA) and Genpharm (San Jose, CA) can be engaged to provide human antibodies directed against a selected antigen using technology similar to that described above.

[0235] Completely human antibodies which recognize a selected epitope can be generated using a technique referred to as "guided selection." In this approach a selected non-human monoclonal antibody, e.g., a mouse antibody, is used to guide the selection of a completely human antibody recognizing the same epitope. (Jespers et al., *Bio/technology* 12:899-903 (1988)).

[0236] Further, antibodies to the polypeptides of the invention can, in turn, be utilized to generate anti-idiotypic antibodies that "mimic" polypeptides of the invention using

techniques well known to those skilled in the art. (See, e.g., Greenspan & Bona, FASEB J. 7(5):437-444; (1989) and Nissinoff, J. Immunol. 147(8):2429-2438 (1991)). For example, antibodies which bind to and competitively inhibit polypeptide multimerization and/or binding of a polypeptide of the invention to a ligand can be used to generate anti-idiotypes that "mimic" the polypeptide multimerization and/or binding domain and, as a consequence, bind to and neutralize polypeptide and/or its ligand. Such neutralizing anti-idiotypes or Fab fragments of such anti-idiotypes can be used in therapeutic regimens to neutralize polypeptide ligand/receptor. For example, such anti-idiotypic antibodies can be used to bind a polypeptide of the invention and/or to bind its ligand(s)/receptor(s), and thereby block its biological activity. Alternatively, antibodies which bind to and enhance polypeptide multimerization and/or binding, and/or receptor/ligand multimerization, binding and/or signaling can be used to generate anti-idiotypes that function as agonists of a polypeptide of the invention and/or its ligand/receptor. Such agonistic anti-idiotypes or Fab fragments of such anti-idiotypes can be used in therapeutic regimens as agonists of the polypeptides of the invention or its ligand(s)/receptor(s). For example, such anti-idiotypic antibodies can be used to bind a polypeptide of the invention and/or to bind its ligand(s)/receptor(s), and thereby promote or enhance its biological activity.

[0237] Intrabodies of the invention can be produced using methods known in the art, such as those disclosed and reviewed in Chen et al., Hum. Gene Ther. 5:595-601 (1994); Marasco, W.A., Gene Ther. 4:11-15 (1997); Rondon and Marasco, Annu. Rev. Microbiol. 51:257-283 (1997); Proba et al., J. Mol. Biol. 275:245-253 (1998); Cohen et al., Oncogene 17:2445-2456 (1998); Ohage and Steipe, J. Mol. Biol. 291:1119-1128 (1999); Ohage et al., J. Mol. Biol. 291:1129-1134 (1999); Wirtz and Steipe, Protein Sci. 8:2245-2250 (1999); Zhu et al., J. Immunol. Methods 231:207-222 (1999); and references cited therein.

#### *Polynucleotides Encoding Antibodies*

[0238] The invention further provides polynucleotides comprising a nucleotide sequence encoding an antibody of the invention and fragments thereof. The invention also encompasses polynucleotides that hybridize under stringent or alternatively, under lower stringency hybridization conditions, e.g., as defined *supra*, to polynucleotides that encode an antibody, preferably, that specifically binds to a polypeptide of the invention, preferably, an antibody that binds to a polypeptide having the amino acid sequence of

SEQ ID NO:Y, to a polypeptide encoded by a portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, and/or to a polypeptide encoded by the cDNA contained in Clone ID NO:Z.

[0239] The polynucleotides may be obtained, and the nucleotide sequence of the polynucleotides determined, by any method known in the art. For example, if the nucleotide sequence of the antibody is known, a polynucleotide encoding the antibody may be assembled from chemically synthesized oligonucleotides (e.g., as described in Kutmeier et al., *BioTechniques* 17:242 (1994)), which, briefly, involves the synthesis of overlapping oligonucleotides containing portions of the sequence encoding the antibody, annealing and ligating of those oligonucleotides, and then amplification of the ligated oligonucleotides by PCR.

[0240] Alternatively, a polynucleotide encoding an antibody may be generated from nucleic acid from a suitable source. If a clone containing a nucleic acid encoding a particular antibody is not available, but the sequence of the antibody molecule is known, a nucleic acid encoding the immunoglobulin may be chemically synthesized or obtained from a suitable source (e.g., an antibody cDNA library, or a cDNA library generated from, or nucleic acid, preferably poly A+ RNA, isolated from, any tissue or cells expressing the antibody, such as hybridoma cells selected to express an antibody of the invention) by PCR amplification using synthetic primers hybridizable to the 3' and 5' ends of the sequence or by cloning using an oligonucleotide probe specific for the particular gene sequence to identify, e.g., a cDNA clone from a cDNA library that encodes the antibody. Amplified nucleic acids generated by PCR may then be cloned into replicable cloning vectors using any method well known in the art.

[0241] Once the nucleotide sequence and corresponding amino acid sequence of the antibody is determined, the nucleotide sequence of the antibody may be manipulated using methods well known in the art for the manipulation of nucleotide sequences, e.g., recombinant DNA techniques, site directed mutagenesis, PCR, etc. (see, for example, the techniques described in Sambrook et al., 1990, *Molecular Cloning, A Laboratory Manual*, 2d Ed., Cold Spring Harbor Laboratory, Cold Spring Harbor, NY and Ausubel et al., eds., 1998, *Current Protocols in Molecular Biology*, John Wiley & Sons, NY, which are both incorporated by reference herein in their entireties), to generate antibodies having a

different amino acid sequence, for example to create amino acid substitutions, deletions, and/or insertions.

[0242] In a specific embodiment, the amino acid sequence of the heavy and/or light chain variable domains may be inspected to identify the sequences of the complementarity determining regions (CDRs) by methods that are well known in the art, e.g., by comparison to known amino acid sequences of other heavy and light chain variable regions to determine the regions of sequence hypervariability. Using routine recombinant DNA techniques, one or more of the CDRs may be inserted within framework regions, e.g., into human framework regions to humanize a non-human antibody, as described *supra*. The framework regions may be naturally occurring or consensus framework regions, and preferably human framework regions (see, e.g., Chothia et al., J. Mol. Biol. 278: 457-479 (1998) for a listing of human framework regions). Preferably, the polynucleotide generated by the combination of the framework regions and CDRs encodes an antibody that specifically binds a polypeptide of the invention. Preferably, as discussed *supra*, one or more amino acid substitutions may be made within the framework regions, and, preferably, the amino acid substitutions improve binding of the antibody to its antigen. Additionally, such methods may be used to make amino acid substitutions or deletions of one or more variable region cysteine residues participating in an intrachain disulfide bond to generate antibody molecules lacking one or more intrachain disulfide bonds. Other alterations to the polynucleotide are encompassed by the present invention and within the skill of the art.

[0243] In addition, techniques developed for the production of "chimeric antibodies" (Morrison et al., Proc. Natl. Acad. Sci. 81:851-855 (1984); Neuberger et al., Nature 312:604-608 (1984); Takeda et al., Nature 314:452-454 (1985)) by splicing genes from a mouse antibody molecule of appropriate antigen specificity together with genes from a human antibody molecule of appropriate biological activity can be used. As described *supra*, a chimeric antibody is a molecule in which different portions are derived from different animal species, such as those having a variable region derived from a murine mAb and a human immunoglobulin constant region, e.g., humanized antibodies.

[0244] Alternatively, techniques described for the production of single chain antibodies (U.S. Patent No. 4,946,778; Bird, Science 242:423-42 (1988); Huston et al., Proc. Natl. Acad. Sci. USA 85:5879-5883 (1988); and Ward et al., Nature 334:544-54



(1989)) can be adapted to produce single chain antibodies. Single chain antibodies are formed by linking the heavy and light chain fragments of the Fv region via an amino acid bridge, resulting in a single chain polypeptide. Techniques for the assembly of functional Fv fragments in *E. coli* may also be used (Skerra et al., Science 242:1038- 1041 (1988)).

#### *Methods of Producing Antibodies*

[0245] The antibodies of the invention can be produced by any method known in the art for the synthesis of antibodies, in particular, by chemical synthesis or preferably, by recombinant expression techniques. Methods of producing antibodies include, but are not limited to, hybridoma technology, EBV transformation, and other methods discussed herein as well as through the use recombinant DNA technology, as discussed below.

[0246] Recombinant expression of an antibody of the invention, or fragment, derivative or analog thereof, (e.g., a heavy or light chain of an antibody of the invention or a single chain antibody of the invention), requires construction of an expression vector containing a polynucleotide that encodes the antibody. Once a polynucleotide encoding an antibody molecule or a heavy or light chain of an antibody, or portion thereof (preferably containing the heavy or light chain variable domain), of the invention has been obtained, the vector for the production of the antibody molecule may be produced by recombinant DNA technology using techniques well known in the art. Thus, methods for preparing a protein by expressing a polynucleotide containing an antibody encoding nucleotide sequence are described herein. Methods which are well known to those skilled in the art can be used to construct expression vectors containing antibody coding sequences and appropriate transcriptional and translational control signals. These methods include, for example, *in vitro* recombinant DNA techniques, synthetic techniques, and *in vivo* genetic recombination. The invention, thus, provides replicable vectors comprising a nucleotide sequence encoding an antibody molecule of the invention, or a heavy or light chain thereof, or a heavy or light chain variable domain, operably linked to a promoter. Such vectors may include the nucleotide sequence encoding the constant region of the antibody molecule (see, e.g., PCT Publication WO 86/05807; PCT Publication WO 89/01036; and U.S. Patent No. 5,122,464) and the variable domain of the antibody may be cloned into such a vector for expression of the entire heavy or light chain.

[0247] The expression vector is transferred to a host cell by conventional techniques and the transfected cells are then cultured by conventional techniques to produce an antibody of the invention. Thus, the invention includes host cells containing a polynucleotide encoding an antibody of the invention, or a heavy or light chain thereof, or a single chain antibody of the invention, operably linked to a heterologous promoter. In preferred embodiments for the expression of double-chained antibodies, vectors encoding both the heavy and light chains may be co-expressed in the host cell for expression of the entire immunoglobulin molecule, as detailed below.

[0248] A variety of host-expression vector systems may be utilized to express the antibody molecules of the invention. Such host-expression systems represent vehicles by which the coding sequences of interest may be produced and subsequently purified, but also represent cells which may, when transformed or transfected with the appropriate nucleotide coding sequences, express an antibody molecule of the invention in situ. These include but are not limited to microorganisms such as bacteria (e.g., *E. coli*, *B. subtilis*) transformed with recombinant bacteriophage DNA, plasmid DNA or cosmid DNA expression vectors containing antibody coding sequences; yeast (e.g., *Saccharomyces*, *Pichia*) transformed with recombinant yeast expression vectors containing antibody coding sequences; insect cell systems infected with recombinant virus expression vectors (e.g., baculovirus) containing antibody coding sequences; plant cell systems infected with recombinant virus expression vectors (e.g., cauliflower mosaic virus, CaMV; tobacco mosaic virus, TMV) or transformed with recombinant plasmid expression vectors (e.g., Ti plasmid) containing antibody coding sequences; or mammalian cell systems (e.g., COS, CHO, BHK, 293, 3T3 cells) harboring recombinant expression constructs containing promoters derived from the genome of mammalian cells (e.g., metallothionein promoter) or from mammalian viruses (e.g., the adenovirus late promoter; the vaccinia virus 7.5K promoter). Preferably, bacterial cells such as *Escherichia coli*, and more preferably, eukaryotic cells, especially for the expression of whole recombinant antibody molecule, are used for the expression of a recombinant antibody molecule. For example, mammalian cells such as Chinese hamster ovary cells (CHO), in conjunction with a vector such as the major intermediate early gene promoter element from human cytomegalovirus is an effective expression system for antibodies (Foecking et al., *Gene* 45:101 (1986); Cockett et al., *Bio/Technology* 8:2 (1990)).

[0249] In bacterial systems, a number of expression vectors may be advantageously selected depending upon the use intended for the antibody molecule being expressed. For example, when a large quantity of such a protein is to be produced, for the generation of pharmaceutical compositions of an antibody molecule, vectors which direct the expression of high levels of fusion protein products that are readily purified may be desirable. Such vectors include, but are not limited, to the *E. coli* expression vector pUR278 (Ruther et al., EMBO J. 2:1791 (1983)), in which the antibody coding sequence may be ligated individually into the vector in frame with the lac Z coding region so that a fusion protein is produced; pIN vectors (Inouye & Inouye, Nucleic Acids Res. 13:3101-3109 (1985); Van Heeke & Schuster, J. Biol. Chem. 24:5503-5509 (1989)); and the like. pGEX vectors may also be used to express foreign polypeptides as fusion proteins with glutathione S-transferase (GST). In general, such fusion proteins are soluble and can easily be purified from lysed cells by adsorption and binding to matrix glutathione-agarose beads followed by elution in the presence of free glutathione. The pGEX vectors are designed to include thrombin or factor Xa protease cleavage sites so that the cloned target gene product can be released from the GST moiety.

[0250] In an insect system, Autographa californica nuclear polyhedrosis virus (AcNPV) is used as a vector to express foreign genes. The virus grows in *Spodoptera frugiperda* cells. The antibody coding sequence may be cloned individually into non-essential regions (for example the polyhedrin gene) of the virus and placed under control of an AcNPV promoter (for example the polyhedrin promoter).

[0251] In mammalian host cells, a number of viral-based expression systems may be utilized. In cases where an adenovirus is used as an expression vector, the antibody coding sequence of interest may be ligated to an adenovirus transcription/translation control complex, e.g., the late promoter and tripartite leader sequence. This chimeric gene may then be inserted in the adenovirus genome by *in vitro* or *in vivo* recombination. Insertion in a non-essential region of the viral genome (e.g., region E1 or E3) will result in a recombinant virus that is viable and capable of expressing the antibody molecule in infected hosts. (e.g., see Logan & Shenk, Proc. Natl. Acad. Sci. USA 81:355-359 (1984)). Specific initiation signals may also be required for efficient translation of inserted antibody coding sequences. These signals include the ATG initiation codon and adjacent sequences. Furthermore, the initiation codon must be in phase with the reading frame of

the desired coding sequence to ensure translation of the entire insert. These exogenous translational control signals and initiation codons can be of a variety of origins, both natural and synthetic. The efficiency of expression may be enhanced by the inclusion of appropriate transcription enhancer elements, transcription terminators, etc. (see Bittner et al., *Methods in Enzymol.* 153:51-544 (1987)).

[0252] In addition, a host cell strain may be chosen which modulates the expression of the inserted sequences, or modifies and processes the gene product in the specific fashion desired. Such modifications (e.g., glycosylation) and processing (e.g., cleavage) of protein products may be important for the function of the protein. Different host cells have characteristic and specific mechanisms for the post-translational processing and modification of proteins and gene products. Appropriate cell lines or host systems can be chosen to ensure the correct modification and processing of the foreign protein expressed. To this end, eukaryotic host cells which possess the cellular machinery for proper processing of the primary transcript, glycosylation, and phosphorylation of the gene product may be used. Such mammalian host cells include but are not limited to CHO, VERY, BHK, HeLa, COS, MDCK, 293, 3T3, WI38, and in particular, breast cancer cell lines such as, for example, BT483, Hs578T, HTB2, BT20 and T47D, and normal mammary gland cell line such as, for example, CRL7030 and Hs578Bst.

[0253] For long-term, high-yield production of recombinant proteins, stable expression is preferred. For example, cell lines which stably express the antibody molecule may be engineered. Rather than using expression vectors which contain viral origins of replication, host cells can be transformed with DNA controlled by appropriate expression control elements (e.g., promoter, enhancer, sequences, transcription terminators, polyadenylation sites, etc.), and a selectable marker. Following the introduction of the foreign DNA, engineered cells may be allowed to grow for 1-2 days in an enriched media, and then are switched to a selective media. The selectable marker in the recombinant plasmid confers resistance to the selection and allows cells to stably integrate the plasmid into their chromosomes and grow to form foci which in turn can be cloned and expanded into cell lines. This method may advantageously be used to engineer cell lines which express the antibody molecule. Such engineered cell lines may be particularly useful in screening and evaluation of compounds that interact directly or indirectly with the antibody molecule.

[0254] A number of selection systems may be used, including but not limited to the herpes simplex virus thymidine kinase (Wigler et al., Cell 11:223 (1977)), hypoxanthine-guanine phosphoribosyltransferase (Szybalska & Szybalski, Proc. Natl. Acad. Sci. USA 48:202 (1992)), and adenine phosphoribosyltransferase (Lowy et al., Cell 22:817 (1980)) genes can be employed in tk-, hgp<sup>r</sup>t- or apt<sup>r</sup>- cells, respectively. Also, antimetabolite resistance can be used as the basis of selection for the following genes: dhfr, which confers resistance to methotrexate (Wigler et al., Natl. Acad. Sci. USA 77:357 (1980); O'Hare et al., Proc. Natl. Acad. Sci. USA 78:1527 (1981)); gpt, which confers resistance to mycophenolic acid (Mulligan & Berg, Proc. Natl. Acad. Sci. USA 78:2072 (1981)); neo, which confers resistance to the aminoglycoside G-418 Clinical Pharmacy 12:488-505; Wu and Wu, Biotherapy 3:87-95 (1991); Tolstoshev, Ann. Rev. Pharmacol. Toxicol. 32:573-596 (1993); Mulligan, Science 260:926-932 (1993); and Morgan and Anderson, Ann. Rev. Biochem. 62:191-217 (1993); TIB TECH 11(5):155-215 (1993); and hyg<sup>r</sup>, which confers resistance to hygromycin (Santerre et al., Gene 30:147 (1984)). Methods commonly known in the art of recombinant DNA technology may be routinely applied to select the desired recombinant clone, and such methods are described, for example, in Ausubel et al. (eds.), Current Protocols in Molecular Biology, John Wiley & Sons, NY (1993); Kriegler, Gene Transfer and Expression, A Laboratory Manual, Stockton Press, NY (1990); and in Chapters 12 and 13, Dracopoli et al. (eds), Current Protocols in Human Genetics, John Wiley & Sons, NY (1994); Colberre-Garapin et al., J. Mol. Biol. 150:1 (1981), which are incorporated by reference herein in their entireties.

[0255] The expression levels of an antibody molecule can be increased by vector amplification (for a review, see Bebbington and Hentschel, The use of vectors based on gene amplification for the expression of cloned genes in mammalian cells in DNA cloning, Vol.3. (Academic Press, New York, 1987)). When a marker in the vector system expressing antibody is amplifiable, increase in the level of inhibitor present in culture of host cell will increase the number of copies of the marker gene. Since the amplified region is associated with the antibody gene, production of the antibody will also increase (Crouse et al., Mol. Cell. Biol. 3:257 (1983)).

[0256] Vectors which use glutamine synthase (GS) or DHFR as the selectable markers can be amplified in the presence of the drugs methionine sulfoximine or methotrexate, respectively. An advantage of glutamine synthase based vectors are the availability of cell

lines (e.g., the murine myeloma cell line, NS0) which are glutamine synthase negative. Glutamine synthase expression systems can also function in glutamine synthase expressing cells (e.g., Chinese Hamster Ovary (CHO) cells) by providing additional inhibitor to prevent the functioning of the endogenous gene. A glutamine synthase expression system and components thereof are detailed in PCT publications: WO87/04462; WO86/05807; WO89/01036; WO89/10404; and WO91/06657 which are incorporated in their entireties by reference herein. Additionally, glutamine synthase expression vectors that may be used according to the present invention are commercially available from suppliers, including, for example Lonza Biologics, Inc. (Portsmouth, NH). Expression and production of monoclonal antibodies using a GS expression system in murine myeloma cells is described in Bebbington et al., *Bio/technology* 10:169(1992) and in Biblia and Robinson *Biotechnol. Prog.* 11:1 (1995) which are incorporated in their entireties by reference herein.

[0257] The host cell may be co-transfected with two expression vectors of the invention, the first vector encoding a heavy chain derived polypeptide and the second vector encoding a light chain derived polypeptide. The two vectors may contain identical selectable markers which enable equal expression of heavy and light chain polypeptides. Alternatively, a single vector may be used which encodes, and is capable of expressing, both heavy and light chain polypeptides. In such situations, the light chain should be placed before the heavy chain to avoid an excess of toxic free heavy chain (Proudfoot, *Nature* 322:52 (1986); Kohler, *Proc. Natl. Acad. Sci. USA* 77:2197 (1980)). The coding sequences for the heavy and light chains may comprise cDNA or genomic DNA.

[0258] Once an antibody molecule of the invention has been produced by an animal, chemically synthesized, or recombinantly expressed, it may be purified by any method known in the art for purification of an immunoglobulin molecule, for example, by chromatography (e.g., ion exchange, affinity, particularly by affinity for the specific antigen after Protein A, and sizing column chromatography), centrifugation, differential solubility, or by any other standard technique for the purification of proteins. In addition, the antibodies of the present invention or fragments thereof can be fused to heterologous polypeptide sequences described herein or otherwise known in the art, to facilitate purification.

[0259] The present invention encompasses antibodies recombinantly fused or chemically conjugated (including both covalently and non-covalently conjugations) to a polypeptide (or portion thereof, preferably at least 10, 20, 30, 40, 50, 60, 70, 80, 90 or 100 amino acids of the polypeptide) of the present invention to generate fusion proteins. The fusion does not necessarily need to be direct, but may occur through linker sequences. The antibodies may be specific for antigens other than polypeptides (or portion thereof, preferably at least 10, 20, 30, 40, 50, 60, 70, 80, 90 or 100 amino acids of the polypeptide) of the present invention. For example, antibodies may be used to target the polypeptides of the present invention to particular cell types, either *in vitro* or *in vivo*, by fusing or conjugating the polypeptides of the present invention to antibodies specific for particular cell surface receptors. Antibodies fused or conjugated to the polypeptides of the present invention may also be used in *in vitro* immunoassays and purification methods using methods known in the art. See e.g., Harbor et al., *supra*, and PCT publication WO 93/21232; EP 439,095; Naramura et al., *Immunol. Lett.* 39:91-99 (1994); U.S. Patent 5,474,981; Gillies et al., *PNAS* 89:1428-1432 (1992); Fell et al., *J. Immunol.* 146:2446-2452 (1991), which are incorporated by reference in their entireties.

[0260] The present invention further includes compositions comprising the polypeptides of the present invention fused or conjugated to antibody domains other than the variable regions. For example, the polypeptides of the present invention may be fused or conjugated to an antibody Fc region, or portion thereof. The antibody portion fused to a polypeptide of the present invention may comprise the constant region, hinge region, CH1 domain, CH2 domain, and CH3 domain or any combination of whole domains or portions thereof. The polypeptides may also be fused or conjugated to the above antibody portions to form multimers. For example, Fc portions fused to the polypeptides of the present invention can form dimers through disulfide bonding between the Fc portions. Higher multimeric forms can be made by fusing the polypeptides to portions of IgA and IgM. Methods for fusing or conjugating the polypeptides of the present invention to antibody portions are known in the art. See, e.g., U.S. Patent Nos. 5,336,603; 5,622,929; 5,359,046; 5,349,053; 5,447,851; 5,112,946; EP 307,434; EP 367,166; PCT publications WO 96/04388; WO 91/06570; Ashkenazi et al., *Proc. Natl. Acad. Sci. USA* 88:10535-10539 (1991); Zheng et al., *J. Immunol.* 154:5590-5600 (1995); and Vil et al., *Proc. Natl.*

Acad. Sci. USA 89:11337- 11341 (1992) (said references incorporated by reference in their entireties).

[0261] As discussed, *supra*, the polypeptides corresponding to a polypeptide, polypeptide fragment, or a variant of SEQ ID NO:Y may be fused or conjugated to the above antibody portions to increase the *in vivo* half life of the polypeptides or for use in immunoassays using methods known in the art. Further, the polypeptides corresponding to SEQ ID NO:Y may be fused or conjugated to the above antibody portions to facilitate purification. One reported example describes chimeric proteins consisting of the first two domains of the human CD4-polypeptide and various domains of the constant regions of the heavy or light chains of mammalian immunoglobulins. See EP 394,827; Trautnecker et al., Nature 331:84-86 (1988). The polypeptides of the present invention fused or conjugated to an antibody having disulfide- linked dimeric structures (due to the IgG) may also be more efficient in binding and neutralizing other molecules, than the monomeric secreted protein or protein fragment alone. See, for example, Fountoulakis et al., J. Biochem. 270:3958-3964 (1995). In many cases, the Fc part in a fusion protein is beneficial in therapy and diagnosis, and thus can result in, for example, improved pharmacokinetic properties. See, for example, EP A 232,262. Alternatively, deleting the Fc part after the fusion protein has been expressed, detected, and purified, would be desired. For example, the Fc portion may hinder therapy and diagnosis if the fusion protein is used as an antigen for immunizations. In drug discovery, for example, human proteins, such as hIL-5, have been fused with Fc portions for the purpose of high-throughput screening assays to identify antagonists of hIL-5. (See, Bennett et al., J. Molecular Recognition 8:52-58 (1995); Johanson et al., J. Biol. Chem. 270:9459-9471 (1995)).

[0262] Moreover, the antibodies or fragments thereof of the present invention can be fused to marker sequences, such as a peptide to facilitate purification. In preferred embodiments, the marker amino acid sequence is a hexa-histidine peptide, such as the tag provided in a pQE vector (QIAGEN, Inc., 9259 Eton Avenue, Chatsworth, CA, 91311), among others, many of which are commercially available. As described in Gentz et al., Proc. Natl. Acad. Sci. USA 86:821-824 (1989), for instance, hexa-histidine provides for convenient purification of the fusion protein. Other peptide tags useful for purification include, but are not limited to, the "HA" tag, which corresponds to an epitope derived



from the influenza hemagglutinin protein (Wilson et al., Cell 37:767 (1984)) and the "flag" tag.

[0263] The present invention further encompasses antibodies or fragments thereof conjugated to a diagnostic or therapeutic agent. The antibodies can be used diagnostically to, for example, monitor the development or progression of a tumor as part of a clinical testing procedure to, e.g., determine the efficacy of a given treatment regimen. Detection can be facilitated by coupling the antibody to a detectable substance. Examples of detectable substances include various enzymes, prosthetic groups, fluorescent materials, luminescent materials, bioluminescent materials, radioactive materials, positron emitting metals using various positron emission tomographies, and nonradioactive paramagnetic metal ions. The detectable substance may be coupled or conjugated either directly to the antibody (or fragment thereof) or indirectly, through an intermediate (such as, for example, a linker known in the art) using techniques known in the art. See, for example, U.S. Patent No. 4,741,900 for metal ions which can be conjugated to antibodies for use as diagnostics according to the present invention.

[0264] Further, an antibody or fragment thereof may be conjugated to a therapeutic moiety such as a cytotoxin, e.g., a cytostatic or cytotoxic agent, a therapeutic agent or a radioactive metal ion, e.g., alpha-emitters such as, for example,  $^{213}\text{Bi}$ . A cytotoxin or cytotoxic agent includes any agent that is detrimental to cells. Examples include paclitaxol, cytochalasin B, gramicidin D, ethidium bromide, emetine, mitomycin, etoposide, teniposide, vincristine, vinblastine, colchicin, doxorubicin, daunorubicin, dihydroxy anthracin dione, mitoxantrone, mithramycin, actinomycin D, 1-dehydrotestosterone, glucocorticoids, procaine, tetracaine, lidocaine, propranolol, and puromycin and analogs or homologs thereof. Therapeutic agents include, but are not limited to, antimetabolites (e.g., methotrexate, 6-mercaptopurine, 6-thioguanine, cytarabine, 5-fluorouracil decarbazine), alkylating agents (e.g., mechlorethamine, thioepa chlorambucil, melphalan, carmustine (BSNU) and lomustine (CCNU), cyclophosphamide, busulfan, dibromomannitol, streptozotocin, mitomycin C, and cis-dichlorodiamine platinum (II) (DDP) cisplatin), anthracyclines (e.g., daunorubicin (formerly daunomycin) and doxorubicin), antibiotics (e.g., dactinomycin (formerly actinomycin), bleomycin, mithramycin, and anthramycin (AMC)), and anti-mitotic agents (e.g., vincristine and vinblastine).

[0265] The conjugates of the invention can be used for modifying a given biological response, the therapeutic agent or drug moiety is not to be construed as limited to classical chemical therapeutic agents. For example, the drug moiety may be a protein or polypeptide possessing a desired biological activity. Such proteins may include, for example, a toxin such as abrin, ricin A, pseudomonas exotoxin, or diphtheria toxin; a protein such as tumor necrosis factor,  $\alpha$ -interferon,  $\beta$ -interferon, nerve growth factor, platelet derived growth factor, tissue plasminogen activator, an apoptotic agent, e.g., TNF- $\alpha$ , TNF- $\beta$ , AIM I (See, International Publication No. WO 97/33899), AIM II (See, International Publication No. WO 97/34911), Fas Ligand (Takahashi *et al.*, *Int. Immunol.*, 6:1567-1574 (1994)), VEGI (See, International Publication No. WO 99/23105), a thrombotic agent or an anti-angiogenic agent, e.g., angiostatin or endostatin; or, biological response modifiers such as, for example, lymphokines, interleukin-1 ("IL-1"), interleukin-2 ("IL-2"), interleukin-6 ("IL-6"), granulocyte macrophage colony stimulating factor ("GM-CSF"), granulocyte colony stimulating factor ("G-CSF"), or other growth factors.

[0266] Antibodies may also be attached to solid supports, which are particularly useful for immunoassays or purification of the target antigen. Such solid supports include, but are not limited to, glass, cellulose, polyacrylamide, nylon, polystyrene, polyvinyl chloride or polypropylene.

[0267] Techniques for conjugating such therapeutic moiety to antibodies are well known. See, for example, Arnon *et al.*, "Monoclonal Antibodies For Immunotargeting Of Drugs In Cancer Therapy", in *Monoclonal Antibodies And Cancer Therapy*, Reisfeld *et al.* (eds.), pp. 243-56 (Alan R. Liss, Inc. 1985); Hellstrom *et al.*, "Antibodies For Drug Delivery", in *Controlled Drug Delivery* (2nd Ed.), Robinson *et al.* (eds.), pp. 623-53 (Marcel Dekker, Inc. 1987); Thorpe, "Antibody Carriers Of Cytotoxic Agents In Cancer Therapy: A Review", in *Monoclonal Antibodies '84: Biological And Clinical Applications*, Pinchera *et al.* (eds.), pp. 475-506 (1985); "Analysis, Results, And Future Prospective Of The Therapeutic Use Of Radiolabeled Antibody In Cancer Therapy", in *Monoclonal Antibodies For Cancer Detection And Therapy*, Baldwin *et al.* (eds.), pp. 303-16 (Academic Press 1985), and Thorpe *et al.*, "The Preparation And Cytotoxic Properties Of Antibody-Toxin Conjugates", *Immunol. Rev.* 62:119-58 (1982).

[0268] Alternatively, an antibody can be conjugated to a second antibody to form an antibody heteroconjugate as described by Segal in U.S. Patent No. 4,676,980, which is incorporated herein by reference in its entirety.

[0269] An antibody, with or without a therapeutic moiety conjugated to it, administered alone or in combination with cytotoxic factor(s) and/or cytokine(s) can be used as a therapeutic.

#### *Immunophenotyping*

[0270] The antibodies of the invention may be utilized for immunophenotyping of cell lines and biological samples. Translation products of the genes of the present invention may be useful as cell specific markers, or more specifically as cellular markers that are differentially expressed at various stages of differentiation and/or maturation of particular cell types. Monoclonal antibodies directed against a specific epitope, or combination of epitopes, will allow for the screening of cellular populations expressing the marker. Various techniques can be utilized using monoclonal antibodies to screen for cellular populations expressing the marker(s), and include magnetic separation using antibody-coated magnetic beads, "panning" with antibody attached to a solid matrix (i.e., plate), and flow cytometry (See, e.g., U.S. Patent 5,985,660; and Morrison et al., Cell, 96:737-49 (1999)).

[0271] These techniques allow for the screening of particular populations of cells, such as might be found with hematological malignancies (i.e. minimal residual disease (MRD) in acute leukemic patients) and "non-self" cells in transplantations to prevent Graft-versus-Host Disease (GVHD). Alternatively, these techniques allow for the screening of hematopoietic stem and progenitor cells capable of undergoing proliferation and/or differentiation, as might be found in human umbilical cord blood.

#### *Assays For Antibody Binding*

[0272] The antibodies of the invention may be assayed for immunospecific binding by any method known in the art. The immunoassays which can be used include but are not limited to competitive and non-competitive assay systems using techniques such as western blots, radioimmunoassays, ELISA (enzyme linked immunosorbent assay), "sandwich" immunoassays, immunoprecipitation assays, precipitin reactions, gel diffusion

precipitin reactions, immunodiffusion assays, agglutination assays, complement-fixation assays, immunoradiometric assays, fluorescent immunoassays, and protein A immunoassays, to name but a few. Such assays are routine and well known in the art (see, e.g., Ausubel et al, eds, 1994, *Current Protocols in Molecular Biology*, Vol. 1, John Wiley & Sons, Inc., New York, which is incorporated by reference herein in its entirety). Exemplary immunoassays are described briefly below (but are not intended by way of limitation).

[0273] Immunoprecipitation protocols generally comprise lysing a population of cells in a lysis buffer such as RIPA buffer (1% NP-40 or Triton X- 100, 1% sodium deoxycholate, 0.1% SDS, 0.15 M NaCl, 0.01 M sodium phosphate at pH 7.2, 1% Trasylol) supplemented with protein phosphatase and/or protease inhibitors (e.g., EDTA, PMSF, aprotinin, sodium vanadate), adding the antibody of interest to the cell lysate, incubating for a period of time (e.g., 1-4 hours) at 4° C, adding protein A and/or protein G sepharose beads to the cell lysate, incubating for about an hour or more at 4° C, washing the beads in lysis buffer and resuspending the beads in SDS/sample buffer. The ability of the antibody of interest to immunoprecipitate a particular antigen can be assessed by, e.g., western blot analysis. One of skill in the art would be knowledgeable as to the parameters that can be modified to increase the binding of the antibody to an antigen and decrease the background (e.g., pre-clearing the cell lysate with sepharose beads). For further discussion regarding immunoprecipitation protocols see, e.g., Ausubel et al., eds., (1994), *Current Protocols in Molecular Biology*, Vol. 1, John Wiley & Sons, Inc., New York, section 10.16.1.

[0274] Western blot analysis generally comprises preparing protein samples, electrophoresis of the protein samples in a polyacrylamide gel (e.g., 8%- 20% SDS-PAGE depending on the molecular weight of the antigen), transferring the protein sample from the polyacrylamide gel to a membrane such as nitrocellulose, PVDF or nylon, blocking the membrane in blocking solution (e.g., PBS with 3% BSA or non-fat milk), washing the membrane in washing buffer (e.g., PBS-Tween 20), blocking the membrane with primary antibody (the antibody of interest) diluted in blocking buffer, washing the membrane in washing buffer, blocking the membrane with a secondary antibody (which recognizes the primary antibody, e.g., an anti-human antibody) conjugated to an enzymatic substrate (e.g., horseradish peroxidase or alkaline phosphatase) or radioactive molecule (e.g., 32P or

125I) diluted in blocking buffer, washing the membrane in wash buffer, and detecting the presence of the antigen. One of skill in the art would be knowledgeable as to the parameters that can be modified to increase the signal detected and to reduce the background noise. For further discussion regarding western blot protocols see, e.g., Ausubel et al., eds., (1994), *Current Protocols in Molecular Biology*, Vol. 1, John Wiley & Sons, Inc., New York, section 10.8.1.

[0275] ELISAs comprise preparing antigen, coating the well of a 96 well microtiter plate with the antigen, adding the antibody of interest conjugated to a detectable compound such as an enzymatic substrate (e.g., horseradish peroxidase or alkaline phosphatase) to the well and incubating for a period of time, and detecting the presence of the antigen. In ELISAs the antibody of interest does not have to be conjugated to a detectable compound; instead, a second antibody (which recognizes the antibody of interest) conjugated to a detectable compound may be added to the well. Further, instead of coating the well with the antigen, the antibody may be coated to the well. In this case, a second antibody conjugated to a detectable compound may be added following the addition of the antigen of interest to the coated well. One of skill in the art would be knowledgeable as to the parameters that can be modified to increase the signal detected as well as other variations of ELISAs known in the art. For further discussion regarding ELISAs see, e.g., Ausubel et al., eds., (1994), *Current Protocols in Molecular Biology*, Vol. 1, John Wiley & Sons, Inc., New York, section 11.2.1.

[0276] The binding affinity of an antibody to an antigen and the off-rate of an antibody-antigen interaction can be determined by competitive binding assays. One example of a competitive binding assay is a radioimmunoassay comprising the incubation of labeled antigen (e.g., <sup>3</sup>H or <sup>125</sup>I) with the antibody of interest in the presence of increasing amounts of unlabeled antigen, and the detection of the antibody bound to the labeled antigen. The affinity of the antibody of interest for a particular antigen and the binding off-rates can be determined from the data by scatchard plot analysis. Competition with a second antibody can also be determined using radioimmunoassays. In this case, the antigen is incubated with antibody of interest conjugated to a labeled compound (e.g., <sup>3</sup>H or <sup>125</sup>I) in the presence of increasing amounts of an unlabeled second antibody.

[0277] Antibodies of the invention may be characterized using immunocytochemistry methods on cells (e.g., mammalian cells, such as CHO cells) transfected with a vector

enabling the expression of an immune/hematopoietic antigen or with vector alone using techniques commonly known in the art. Antibodies that bind immune/hematopoietic antigen transfected cells, but not vector-only transfected cells, are immune/hematopoietic antigen specific.

#### *Therapeutic Uses*

[0278] The present invention is further directed to antibody-based therapies which involve administering antibodies of the invention to an animal, preferably a mammal, and most preferably a human, patient for treating one or more of the disclosed diseases, disorders, or conditions. Therapeutic compounds of the invention include, but are not limited to, antibodies of the invention (including fragments, analogs and derivatives thereof as described herein) and nucleic acids encoding antibodies of the invention (including fragments, analogs and derivatives thereof and anti-idiotypic antibodies as described herein). The antibodies of the invention can be used to treat, inhibit or prevent diseases, disorders or conditions associated with aberrant expression and/or activity of a polypeptide of the invention, including, but not limited to, any one or more of the diseases, disorders, or conditions described herein. The treatment and/or prevention of diseases, disorders, or conditions associated with aberrant expression and/or activity of a polypeptide of the invention includes, but is not limited to, alleviating symptoms associated with those diseases, disorders or conditions. Antibodies of the invention may be provided in pharmaceutically acceptable compositions as known in the art or as described herein.

[0279] In a specific and preferred embodiment, the present invention is directed to antibody-based therapies which involve administering antibodies of the invention to an animal, preferably a mammal, and most preferably a human, patient for treating one or more of the diseases, disorders, or conditions associated with hematopoiesis or the immune system, including, but not limited to, anemias, autoimmune diseases, immunodeficiencies, allergies, asthma, inflammation and infectious/parasitic diseases. Therapeutic compounds of the invention include, but are not limited to, antibodies of the invention (e.g., antibodies directed to the full length protein expressed on the cell surface of a mammalian cell; antibodies directed to an epitope of an immune/hematopoietic associated polypeptide of the invention (such as, a linear epitope (shown in Table 1A,

column 6) or a conformational epitope), including fragments, analogs and derivatives thereof as described herein) and nucleic acids encoding antibodies of the invention (including fragments, analogs and derivatives thereof and anti-idiotypic antibodies as described herein). The antibodies of the invention can be used to treat, inhibit or prevent diseases, disorders or conditions associated with aberrant expression and/or activity of a polypeptide of the invention, including, but not limited to, any one or more of the diseases, disorders, or conditions associated with hematopoiesis or the immune system described herein. The treatment and/or prevention of diseases, disorders, or conditions of hematopoiesis or the immune system associated with aberrant expression and/or activity of a polypeptide of the invention includes, but is not limited to, alleviating symptoms associated with those diseases, disorders or conditions. Antibodies of the invention may be provided in pharmaceutically acceptable compositions as known in the art or as described herein.

[0280] A summary of the ways in which the antibodies of the present invention may be used therapeutically includes binding polynucleotides or polypeptides of the present invention locally or systemically in the body or by direct cytotoxicity of the antibody, e.g. as mediated by complement (CDC) or by effector cells (ADCC). Some of these approaches are described in more detail below. Armed with the teachings provided herein, one of ordinary skill in the art will know how to use the antibodies of the present invention for diagnostic, monitoring or therapeutic purposes without undue experimentation.

[0281] The antibodies of this invention may be advantageously utilized in combination with other monoclonal or chimeric antibodies, or with lymphokines or hematopoietic growth factors (such as, e.g., IL-2, IL-3 and IL-7), for example, which serve to increase the number or activity of effector cells which interact with the antibodies.

[0282] The antibodies of the invention may be administered alone or in combination with other types of treatments (e.g., radiation therapy, chemotherapy, hormonal therapy, immunotherapy and anti-tumor agents). Generally, administration of products of a species origin or species reactivity (in the case of antibodies) that is the same species as that of the patient is preferred. Thus, in a preferred embodiment, human antibodies, fragments

derivatives, analogs, or nucleic acids, are administered to a human patient for therapy or prophylaxis.

[0283] It is preferred to use high affinity and/or potent *in vivo* inhibiting and/or neutralizing antibodies against polypeptides or polynucleotides of the present invention, fragments or regions thereof, for both immunoassays directed to and therapy of disorders related to polynucleotides or polypeptides, including fragments thereof, of the present invention. Such antibodies, fragments, or regions, will preferably have an affinity for polynucleotides or polypeptides of the invention, including fragments thereof. Preferred binding affinities include those with a dissociation constant or  $K_d$  less than  $5 \times 10^{-2}$  M,  $10^{-2}$  M,  $5 \times 10^{-3}$  M,  $10^{-3}$  M,  $5 \times 10^{-4}$  M,  $10^{-4}$  M,  $5 \times 10^{-5}$  M,  $10^{-5}$  M,  $5 \times 10^{-6}$  M,  $10^{-6}$  M,  $5 \times 10^{-7}$  M,  $10^{-7}$  M,  $5 \times 10^{-8}$  M,  $10^{-8}$  M,  $5 \times 10^{-9}$  M,  $10^{-9}$  M,  $5 \times 10^{-10}$  M,  $10^{-10}$  M,  $5 \times 10^{-11}$  M,  $10^{-11}$  M,  $5 \times 10^{-12}$  M,  $10^{-12}$  M,  $5 \times 10^{-13}$  M,  $10^{-13}$  M,  $5 \times 10^{-14}$  M,  $10^{-14}$  M,  $5 \times 10^{-15}$  M, and  $10^{-15}$  M.

### *Gene Therapy*

[0284] In a specific embodiment, nucleic acids comprising sequences encoding antibodies or functional derivatives thereof, are administered to treat, inhibit or prevent a disease or disorder associated with aberrant expression and/or activity of a polypeptide of the invention, by way of gene therapy. Gene therapy refers to therapy performed by the administration to a subject of an expressed or expressible nucleic acid. In this embodiment of the invention, the nucleic acids produce their encoded protein that mediates a therapeutic effect.

[0285] Any of the methods for gene therapy available in the art can be used according to the present invention. Exemplary methods are described below.

[0286] For general reviews of the methods of gene therapy, see Goldspiel et al., *Clinical Pharmacy* 12:488-505 (1993); Wu and Wu, *Biotherapy* 3:87-95 (1991); Tolstoshev, *Ann. Rev. Pharmacol. Toxicol.* 32:573-596 (1993); Mulligan, *Science* 260:926-932 (1993); and Morgan and Anderson, *Ann. Rev. Biochem.* 62:191-217 (1993); May, *TIBTECH* 11(5):155-215 (1993). Methods commonly known in the art of recombinant DNA technology which can be used are described in Ausubel et al. (eds.), *Current Protocols in Molecular Biology*, John Wiley & Sons, NY (1993); and Kriegler, *Gene Transfer and Expression, A Laboratory Manual*, Stockton Press, NY (1990).



[0287] In a preferred embodiment, the compound comprises nucleic acid sequences encoding an antibody, said nucleic acid sequences being part of expression vectors that express the antibody or fragments or chimeric proteins or heavy or light chains thereof in a suitable host. In particular, such nucleic acid sequences have promoters operably linked to the antibody coding region, said promoter being inducible or constitutive, and, optionally, tissue-specific. In another particular embodiment, nucleic acid molecules are used in which the antibody coding sequences and any other desired sequences are flanked by regions that promote homologous recombination at a desired site in the genome, thus providing for intrachromosomal expression of the antibody encoding nucleic acids (Koller and Smithies, Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); Zijlstra et al., Nature 342:435-438 (1989). In specific embodiments, the expressed antibody molecule is a single chain antibody; alternatively, the nucleic acid sequences include sequences encoding both the heavy and light chains, or fragments thereof, of the antibody.

[0288] Delivery of the nucleic acids into a patient may be either direct, in which case the patient is directly exposed to the nucleic acid or nucleic acid-carrying vectors, or indirect, in which case, cells are first transformed with the nucleic acids *in vitro*, then transplanted into the patient. These two approaches are known, respectively, as *in vivo* or *ex vivo* gene therapy.

[0289] In a specific embodiment, the nucleic acid sequences are directly administered *in vivo*, where it is expressed to produce the encoded product. This can be accomplished by any of numerous methods known in the art, e.g., by constructing them as part of an appropriate nucleic acid expression vector and administering it so that they become intracellular, e.g., by infection using defective or attenuated retrovirals or other viral vectors (see U.S. Patent No. 4,980,286), or by direct injection of naked DNA, or by use of microparticle bombardment (e.g., a gene gun; Biolistic, Dupont), or coating with lipids or cell-surface receptors or transfecting agents, encapsulation in liposomes, microparticles, or microcapsules, or by administering them in linkage to a peptide which is known to enter the nucleus, by administering it in linkage to a ligand subject to receptor-mediated endocytosis (see, e.g., Wu and Wu, J. Biol. Chem. 262:4429-4432 (1987)) (which can be used to target cell types specifically expressing the receptors), etc. In another embodiment, nucleic acid-ligand complexes can be formed in which the ligand comprises a fusogenic viral peptide to disrupt endosomes, allowing the nucleic acid to avoid

lysosomal degradation. In yet another embodiment, the nucleic acid can be targeted *in vivo* for cell specific uptake and expression, by targeting a specific receptor (see, e.g., PCT Publications WO 92/06180; WO 92/22635; WO92/20316; WO93/14188, WO 93/20221). Alternatively, the nucleic acid can be introduced intracellularly and incorporated within host cell DNA for expression, by homologous recombination (Koller and Smithies, Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); Zijlstra et al., Nature 342:435-438 (1989)).

[0290] In a specific embodiment, viral vectors that contains nucleic acid sequences encoding an antibody of the invention are used. For example, a retroviral vector can be used (see Miller et al., Meth. Enzymol. 217:581-599 (1993)). These retroviral vectors contain the components necessary for the correct packaging of the viral genome and integration into the host cell DNA. The nucleic acid sequences encoding the antibody to be used in gene therapy are cloned into one or more vectors, which facilitates delivery of the gene into a patient. More detail about retroviral vectors can be found in Boesen et al., Biotherapy 6:291-302 (1994), which describes the use of a retroviral vector to deliver the *mdrl* gene to hematopoietic stem cells in order to make the stem cells more resistant to chemotherapy. Other references illustrating the use of retroviral vectors in gene therapy are: Clowes et al., J. Clin. Invest. 93:644-651 (1994); Kiem et al., Blood 83:1467-1473 (1994); Salmons and Gunzberg, Human Gene Therapy 4:129-141 (1993); and Grossman and Wilson, Curr. Opin. in Genetics and Devel. 3:110-114 (1993).

[0291] Adenoviruses are other viral vectors that can be used in gene therapy. Adenoviruses are especially attractive vehicles for delivering genes to respiratory epithelia. Adenoviruses naturally infect respiratory epithelia where they cause a mild disease. Other targets for adenovirus-based delivery systems are liver, the central nervous system, endothelial cells, and muscle. Adenoviruses have the advantage of being capable of infecting non-dividing cells. Kozarsky and Wilson, Current Opinion in Genetics and Development 3:499-503 (1993) present a review of adenovirus-based gene therapy. Bout et al., Human Gene Therapy 5:3-10 (1994) demonstrated the use of adenovirus vectors to transfer genes to the respiratory epithelia of rhesus monkeys. Other instances of the use of adenoviruses in gene therapy can be found in Rosenfeld et al., Science 252:431-434 (1991); Rosenfeld et al., Cell 68:143-155 (1992); Mastrangeli et al., J. Clin. Invest.

91:225-234 (1993); PCT Publication WO94/12649; and Wang, et al., Gene Therapy 2:775-783 (1995). In a preferred embodiment, adenovirus vectors are used.

[0292] Adeno-associated virus (AAV) has also been proposed for use in gene therapy (Walsh et al., Proc. Soc. Exp. Biol. Med. 204:289-300 (1993); U.S. Patent No. 5,436,146).

[0293] Another approach to gene therapy involves transferring a gene to cells in tissue culture by such methods as electroporation, lipofection, calcium phosphate mediated transfection, or viral infection. Usually, the method of transfer includes the transfer of a selectable marker to the cells. The cells are then placed under selection to isolate those cells that have taken up and are expressing the transferred gene. Those cells are then delivered to a patient.

[0294] In this embodiment, the nucleic acid is introduced into a cell prior to administration *in vivo* of the resulting recombinant cell. Such introduction can be carried out by any method known in the art, including but not limited to transfection, electroporation, microinjection, infection with a viral or bacteriophage vector containing the nucleic acid sequences, cell fusion, chromosome-mediated gene transfer, microcell-mediated gene transfer, spheroplast fusion, etc. Numerous techniques are known in the art for the introduction of foreign genes into cells (see, e.g., Loeffler and Behr, Meth. Enzymol. 217:599-618 (1993); Cohen et al., Meth. Enzymol. 217:618-644 (1993); Cline, Pharmac. Ther. 29:69-92m (1985) and may be used in accordance with the present invention, provided that the necessary developmental and physiological functions of the recipient cells are not disrupted. The technique should provide for the stable transfer of the nucleic acid to the cell, so that the nucleic acid is expressible by the cell and preferably heritable and expressible by its cell progeny.

[0295] The resulting recombinant cells can be delivered to a patient by various methods known in the art. Recombinant blood cells (e.g., hematopoietic stem or progenitor cells) are preferably administered intravenously. The amount of cells envisioned for use depends on the desired effect, patient state, etc., and can be determined by one skilled in the art.

[0296] Cells into which a nucleic acid can be introduced for purposes of gene therapy encompass any desired, available cell type, and include but are not limited to epithelial cells, endothelial cells, keratinocytes, fibroblasts, muscle cells, hepatocytes; blood cells

such as T lymphocytes, B lymphocytes, monocytes, macrophages, neutrophils, eosinophils, megakaryocytes, granulocytes; various stem or progenitor cells, in particular hematopoietic stem or progenitor cells, e.g., as obtained from bone marrow, umbilical cord blood, peripheral blood, fetal liver, etc.

[0297] In a preferred embodiment, the cell used for gene therapy is autologous to the patient.

[0298] In an embodiment in which recombinant cells are used in gene therapy, nucleic acid sequences encoding an antibody are introduced into the cells such that they are expressible by the cells or their progeny, and the recombinant cells are then administered *in vivo* for therapeutic effect. In a specific embodiment, stem or progenitor cells are used. Any stem and/or progenitor cells which can be isolated and maintained *in vitro* can potentially be used in accordance with this embodiment of the present invention (see e.g. PCT Publication WO 94/08598; Stemple and Anderson, Cell 71:973-985 (1992); Rheinwald, Meth. Cell Bio. 21A:229 (1980); and Pittelkow and Scott, Mayo Clinic Proc. 61:771 (1986)).

[0299] In a specific embodiment, the nucleic acid to be introduced for purposes of gene therapy comprises an inducible promoter operably linked to the coding region, such that expression of the nucleic acid is controllable by the presence or absence of an appropriate inducer of transcription.

#### *Demonstration of Therapeutic or Prophylactic Activity*

[0300] The compounds or pharmaceutical compositions of the invention are preferably tested *in vitro*, and then *in vivo* for the desired therapeutic or prophylactic activity, prior to use in humans. For example, *in vitro* assays to demonstrate the therapeutic or prophylactic utility of a compound or pharmaceutical composition include, the effect of a compound on a cell line or a patient tissue sample. The effect of the compound or composition on the cell line and/or tissue sample can be determined utilizing techniques known to those of skill in the art including, but not limited to, rosette formation assays and cell lysis assays. In accordance with the invention, *in vitro* assays which can be used to determine whether administration of a specific compound is indicated, include *in vitro* cell culture assays in which a patient tissue sample is grown in culture, and exposed to or

otherwise administered a compound, and the effect of such compound upon the tissue sample is observed.

*Therapeutic/Prophylactic Administration and Composition*

[0301] The invention provides methods of treatment, inhibition and prophylaxis by administration to a subject of an effective amount of a compound or pharmaceutical composition of the invention, preferably a polypeptide or antibody of the invention. In a preferred embodiment, the compound is substantially purified (e.g., substantially free from substances that limit its effect or produce undesired side-effects). The subject is preferably an animal, including but not limited to animals such as cows, pigs, horses, chickens, cats, dogs, etc., and is preferably a mammal, and most preferably human.

[0302] Formulations and methods of administration that can be employed when the compound comprises a nucleic acid or an immunoglobulin are described above; additional appropriate formulations and routes of administration can be selected from among those described herein below.

[0303] Various delivery systems are known and can be used to administer a compound of the invention, e.g., encapsulation in liposomes, microparticles, microcapsules, recombinant cells capable of expressing the compound, receptor-mediated endocytosis (see, e.g., Wu and Wu, J. Biol. Chem. 262:4429-4432 (1987)), construction of a nucleic acid as part of a retroviral or other vector, etc. Methods of introduction include but are not limited to intradermal, intramuscular, intraperitoneal, intravenous, subcutaneous, intranasal, epidural, and oral routes. The compounds or compositions may be administered by any convenient route, for example by infusion or bolus injection, by absorption through epithelial or mucocutaneous linings (e.g., oral mucosa, rectal and intestinal mucosa, etc.) and may be administered together with other biologically active agents. Administration can be systemic or local. In addition, it may be desirable to introduce the pharmaceutical compounds or compositions of the invention into the central nervous system by any suitable route, including intraventricular and intrathecal injection; intraventricular injection may be facilitated by an intraventricular catheter, for example, attached to a reservoir, such as an Ommaya reservoir. Pulmonary administration can also be employed, e.g., by use of an inhaler or nebulizer, and formulation with an aerosolizing agent.

[0304] In a specific embodiment, it may be desirable to administer the pharmaceutical compounds or compositions of the invention locally to the area in need of treatment; this may be achieved by, for example, and not by way of limitation, local infusion during surgery, topical application, e.g., in conjunction with a wound dressing after surgery, by injection, by means of a catheter, by means of a suppository, or by means of an implant, said implant being of a porous, non-porous, or gelatinous material, including membranes, such as sialastic membranes, or fibers. Preferably, when administering a protein, including an antibody, of the invention, care must be taken to use materials to which the protein does not absorb.

[0305] In another embodiment, the compound or composition can be delivered in a vesicle, in particular a liposome (see Langer, *Science* 249:1527-1533 (1990); Treat et al., in *Liposomes in the Therapy of Infectious Disease and Cancer*, Lopez-Berestein and Fidler (eds.), Liss, New York, pp. 353- 365 (1989); Lopez-Berestein, *ibid.*, pp. 317-327; see generally *ibid.*)

[0306] In yet another embodiment, the compound or composition can be delivered in a controlled release system. In one embodiment, a pump may be used (see Langer, *supra*; Sefton, *CRC Crit. Ref. Biomed. Eng.* 14:201 (1987); Buchwald et al., *Surgery* 88:507 (1980); Saudek et al., *N. Engl. J. Med.* 321:574 (1989)). In another embodiment, polymeric materials can be used (see *Medical Applications of Controlled Release*, Langer and Wise (eds.), CRC Pres., Boca Raton, Florida (1974); *Controlled Drug Bioavailability, Drug Product Design and Performance*, Smolen and Ball (eds.), Wiley, New York (1984); Ranger and Peppas, J., *Macromol. Sci. Rev. Macromol. Chem.* 23:61 (1983); see also Levy et al., *Science* 228:190 (1985); During et al., *Ann. Neurol.* 25:351 (1989); Howard et al., *J.Neurosurg.* 71:105 (1989)). In yet another embodiment, a controlled release system can be placed in proximity of the therapeutic target, e.g., the brain, thus requiring only a fraction of the systemic dose (see, e.g., Goodson, in *Medical Applications of Controlled Release*, *supra*, vol. 2, pp. 115-138 (1984)).

[0307] Other controlled release systems are discussed in the review by Langer (*Science* 249:1527-1533 (1990)).

[0308] In a specific embodiment where the compound of the invention is a nucleic acid encoding a protein, the nucleic acid can be administered *in vivo* to promote expression of its encoded protein, by constructing it as part of an appropriate nucleic acid

expression vector and administering it so that it becomes intracellular, e.g., by use of a retroviral vector (see U.S. Patent No. 4,980,286), or by direct injection, or by use of microparticle bombardment (e.g., a gene gun; Biolistic, Dupont), or coating with lipids or cell-surface receptors or transfecting agents, or by administering it in linkage to a homeobox-like peptide which is known to enter the nucleus (see e.g., Joliet et al., Proc. Natl. Acad. Sci. USA 88:1864-1868 (1991)), etc. Alternatively, a nucleic acid can be introduced intracellularly and incorporated within host cell DNA for expression, by homologous recombination.

[0309] The present invention also provides pharmaceutical compositions. Such compositions comprise a therapeutically effective amount of a compound, and a pharmaceutically acceptable carrier. In a specific embodiment, the term "pharmaceutically acceptable" means approved by a regulatory agency of the Federal or a state government or listed in the U.S. Pharmacopeia or other generally recognized pharmacopeia for use in animals, and more particularly in humans. The term "carrier" refers to a diluent, adjuvant, excipient, or vehicle with which the therapeutic is administered. Such pharmaceutical carriers can be sterile liquids, such as water and oils, including those of petroleum, animal, vegetable or synthetic origin, such as peanut oil, soybean oil, mineral oil, sesame oil and the like. Water is a preferred carrier when the pharmaceutical composition is administered intravenously. Saline solutions and aqueous dextrose and glycerol solutions can also be employed as liquid carriers, particularly for injectable solutions. Suitable pharmaceutical excipients include starch, glucose, lactose, sucrose, gelatin, malt, rice, flour, chalk, silica gel, sodium stearate, glycerol monostearate, talc, sodium chloride, dried skim milk, glycerol, propylene, glycol, water, ethanol and the like. The composition, if desired, can also contain minor amounts of wetting or emulsifying agents, or pH buffering agents. These compositions can take the form of solutions, suspensions, emulsion, tablets, pills, capsules, powders, sustained-release formulations and the like. The composition can be formulated as a suppository, with traditional binders and carriers such as triglycerides. Oral formulation can include standard carriers such as pharmaceutical grades of mannitol, lactose, starch, magnesium stearate, sodium saccharine, cellulose, magnesium carbonate, etc. Examples of suitable pharmaceutical carriers are described in "Remington's Pharmaceutical Sciences" by E.W. Martin. Such compositions will contain a therapeutically effective amount of the

compound, preferably in purified form, together with a suitable amount of carrier so as to provide the form for proper administration to the patient. The formulation should suit the mode of administration.

[0310] In a preferred embodiment, the composition is formulated in accordance with routine procedures as a pharmaceutical composition adapted for intravenous administration to human beings. Typically, compositions for intravenous administration are solutions in sterile isotonic aqueous buffer. Where necessary, the composition may also include a solubilizing agent and a local anesthetic such as lignocaine to ease pain at the site of the injection. Generally, the ingredients are supplied either separately or mixed together in unit dosage form, for example, as a dry lyophilized powder or water free concentrate in a hermetically sealed container such as an ampoule or sachette indicating the quantity of active agent. Where the composition is to be administered by infusion, it can be dispensed with an infusion bottle containing sterile pharmaceutical grade water or saline. Where the composition is administered by injection, an ampoule of sterile water for injection or saline can be provided so that the ingredients may be mixed prior to administration.

[0311] The compounds of the invention can be formulated as neutral or salt forms. Pharmaceutically acceptable salts include those formed with anions such as those derived from hydrochloric, phosphoric, acetic, oxalic, tartaric acids, etc., and those formed with cations such as those derived from sodium, potassium, ammonium, calcium, ferric hydroxides, isopropylamine, triethylamine, 2-ethylamino ethanol, histidine, procaine, etc.

[0312] The amount of the compound of the invention which will be effective in the treatment, inhibition and prevention of a disease or disorder associated with aberrant expression and/or activity of a polypeptide of the invention can be determined by standard clinical techniques. In addition, *in vitro* assays may optionally be employed to help identify optimal dosage ranges. The precise dose to be employed in the formulation will also depend on the route of administration, and the seriousness of the disease or disorder, and should be decided according to the judgment of the practitioner and each patient's circumstances. Effective doses may be extrapolated from dose-response curves derived from *in vitro* or animal model test systems.

[0313] For antibodies, the dosage administered to a patient is typically 0.1 mg/kg to 100 mg/kg of the patient's body weight. Preferably, the dosage administered to a patient



is between 0.1 mg/kg and 20 mg/kg of the patient's body weight, more preferably 1 mg/kg to 10 mg/kg of the patient's body weight. Generally, human antibodies have a longer half-life within the human body than antibodies from other species due to the immune response to the foreign polypeptides. Thus, lower dosages of human antibodies and less frequent administration is often possible. Further, the dosage and frequency of administration of antibodies of the invention may be reduced by enhancing uptake and tissue penetration (e.g., into the brain) of the antibodies by modifications such as, for example, lipidation.

- [0314] The invention also provides a pharmaceutical pack or kit comprising one or more containers filled with one or more of the ingredients of the pharmaceutical compositions of the invention. Optionally associated with such container(s) can be a notice in the form prescribed by a governmental agency regulating the manufacture, use or sale of pharmaceuticals or biological products, which notice reflects approval by the agency of manufacture, use or sale for human administration.

#### *Diagnosis and Imaging*

- [0315] Labeled antibodies, and derivatives and analogs thereof, which specifically bind to a polypeptide of interest can be used for diagnostic purposes to detect, diagnose, or monitor diseases, disorders, and/or conditions associated with the aberrant expression and/or activity of a polypeptide of the invention. The invention provides for the detection of aberrant expression of a polypeptide of interest, comprising (a) assaying the expression of the polypeptide of interest in cells or body fluid of an individual using one or more antibodies specific to the polypeptide interest and (b) comparing the level of gene expression with a standard gene expression level, whereby an increase or decrease in the assayed polypeptide gene expression level compared to the standard expression level is indicative of aberrant expression.

- [0316] The invention provides a diagnostic assay for diagnosing an immune/hematopoietic-related disorder, comprising (a) assaying the expression of the polypeptide of interest in cells or body fluid of an individual using one or more antibodies specific to the polypeptide interest and (b) comparing the level of gene expression with a standard gene expression level, whereby an increase or decrease in the assayed polypeptide gene expression level compared to the standard expression level is indicative

of a particular disorder. With respect to cancer, the presence of a relatively high amount of transcript in biopsied tissue from an individual may indicate a predisposition for the development of the disease, or may provide a means for detecting the disease prior to the appearance of actual clinical symptoms. A more definitive diagnosis of this type may allow health professionals to employ preventative measures or aggressive treatment earlier thereby preventing the development or further progression of the cancer.

[0317] Antibodies of the invention can be used to assay protein levels in a biological sample using classical immunohistological methods known to those of skill in the art (e.g., see Jalkanen et al., J. Cell. Biol. 101:976-985 (1985); Jalkanen et al., J. Cell. Biol. 105:3087-3096 (1987)). Other antibody-based methods useful for detecting protein gene expression include immunoassays, such as the enzyme linked immunosorbent assay (ELISA) and the radioimmunoassay (RIA). Suitable antibody assay labels are known in the art and include enzyme labels, such as, glucose oxidase; radioisotopes, such as iodine ( $^{125}\text{I}$ ,  $^{121}\text{I}$ ), carbon ( $^{14}\text{C}$ ), sulfur ( $^{35}\text{S}$ ), tritium ( $^3\text{H}$ ), indium ( $^{112}\text{In}$ ), and technetium ( $^{99}\text{Tc}$ ); luminescent labels, such as luminol; and fluorescent labels, such as fluorescein and rhodamine, and biotin.

[0318] One facet of the invention is the detection and diagnosis of a disease or disorder associated with aberrant expression of a polypeptide of interest in an animal, preferably a mammal and most preferably a human. A preferred embodiment of the invention is the detection and diagnosis of a disease or disorder of hematopoiesis or the immune system associated with aberrant expression of an immune/hematopoietic antigen in an animal, preferably a mammal and most preferably a human. In one embodiment, diagnosis comprises: a) administering (for example, parenterally, subcutaneously, or intraperitoneally) to a subject an effective amount of a labeled molecule which specifically binds to the polypeptide of interest; b) waiting for a time interval following the administering for permitting the labeled molecule to preferentially concentrate at sites in the subject where the polypeptide is expressed (and for unbound labeled molecule to be cleared to background level); c) determining background level; and d) detecting the labeled molecule in the subject, such that detection of labeled molecule above the background level indicates that the subject has a particular disease or disorder associated with aberrant expression of the polypeptide of interest. Background level can be

determined by various methods including, comparing the amount of labeled molecule detected to a standard value previously determined for a particular system.

[0319] It will be understood in the art that the size of the subject and the imaging system used will determine the quantity of imaging moiety needed to produce diagnostic images. In the case of a radioisotope moiety, for a human subject, the quantity of radioactivity injected will normally range from about 5 to 20 millicuries of  $^{99m}\text{Tc}$ . The labeled antibody or antibody fragment will then preferentially accumulate at the location of cells which contain the specific protein. *In vivo* tumor imaging is described in S.W. Burchiel et al., "Immunopharmacokinetics of Radiolabeled Antibodies and Their Fragments." (Chapter 13 in *Tumor Imaging: The Radiochemical Detection of Cancer*, S.W. Burchiel and B. A. Rhodes, eds., Masson Publishing Inc. (1982)).

[0320] Depending on several variables, including the type of label used and the mode of administration, the time interval following the administration for permitting the labeled molecule to preferentially concentrate at sites in the subject and for unbound labeled molecule to be cleared to background level is 6 to 48 hours or 6 to 24 hours or 6 to 12 hours. In another embodiment the time interval following administration is 5 to 20 days or 5 to 10 days.

[0321] In an embodiment, monitoring of the disease or disorder is carried out by repeating the method for diagnosing the disease or disorder, for example, one month after initial diagnosis, six months after initial diagnosis, one year after initial diagnosis, etc.

[0322] Presence of the labeled molecule can be detected in the patient using methods known in the art for *in vivo* scanning. These methods depend upon the type of label used. Skilled artisans will be able to determine the appropriate method for detecting a particular label. Methods and devices that may be used in the diagnostic methods of the invention include, but are not limited to, computed tomography (CT), whole body scan such as position emission tomography (PET), magnetic resonance imaging (MRI), and sonography.

[0323] In a specific embodiment, the molecule is labeled with a radioisotope and is detected in the patient using a radiation responsive surgical instrument (Thurston et al., U.S. Patent No. 5,441,050). In another embodiment, the molecule is labeled with a fluorescent compound and is detected in the patient using a fluorescence responsive scanning instrument. In another embodiment, the molecule is labeled with a positron

emitting metal and is detected in the patent using positron emission-tomography. In yet another embodiment, the molecule is labeled with a paramagnetic label and is detected in a patient using magnetic resonance imaging (MRI).

#### *Kits*

[0324] The present invention provides kits that can be used in the above methods. In one embodiment, a kit comprises an antibody of the invention, preferably a purified antibody, in one or more containers. In a specific embodiment, the kits of the present invention contain a substantially isolated polypeptide comprising an epitope which is specifically immunoreactive with an antibody included in the kit. Preferably, the kits of the present invention further comprise a control antibody which does not react with the polypeptide of interest. In another specific embodiment, the kits of the present invention contain a means for detecting the binding of an antibody to a polypeptide of interest (e.g., the antibody may be conjugated to a detectable substrate such as a fluorescent compound, an enzymatic substrate, a radioactive compound or a luminescent compound, or a second antibody which recognizes the first antibody may be conjugated to a detectable substrate).

[0325] In another specific embodiment of the present invention, the kit is a diagnostic kit for use in screening serum containing antibodies specific against proliferative and/or cancerous polynucleotides and polypeptides. Such a kit may include a control antibody that does not react with the polypeptide of interest. Such a kit may include a substantially isolated polypeptide antigen comprising an epitope which is specifically immunoreactive with at least one anti-polypeptide antigen antibody. Further, such a kit includes means for detecting the binding of said antibody to the antigen (e.g., the antibody may be conjugated to a fluorescent compound such as fluorescein or rhodamine which can be detected by flow cytometry). In specific embodiments, the kit may include a recombinantly produced or chemically synthesized polypeptide antigen. The polypeptide antigen of the kit may also be attached to a solid support.

[0326] In a more specific embodiment the detecting means of the above-described kit includes a solid support to which said polypeptide antigen is attached. Such a kit may also include a non-attached reporter-labeled anti-human antibody. In this embodiment, binding of the antibody to the polypeptide antigen can be detected by binding of the said reporter-labeled antibody.

[0327] In an additional embodiment, the invention includes a diagnostic kit for use in screening serum containing antigens of the polypeptide of the invention. The diagnostic kit includes a substantially isolated antibody specifically immunoreactive with polypeptide or polynucleotide antigens, and means for detecting the binding of the polynucleotide or polypeptide antigen to the antibody. In one embodiment, the antibody is attached to a solid support. In a specific embodiment, the antibody may be a monoclonal antibody. The detecting means of the kit may include a second, labeled monoclonal antibody. Alternatively, or in addition, the detecting means may include a labeled, competing antigen.

[0328] In one diagnostic configuration, test serum is reacted with a solid phase reagent having a surface-bound antigen obtained by the methods of the present invention. After binding with specific antigen antibody to the reagent and removing unbound serum components by washing, the reagent is reacted with reporter-labeled anti-human antibody to bind reporter to the reagent in proportion to the amount of bound anti-antigen antibody on the solid support. The reagent is again washed to remove unbound labeled antibody, and the amount of reporter associated with the reagent is determined. Typically, the reporter is an enzyme which is detected by incubating the solid phase in the presence of a suitable fluorometric, luminescent or colorimetric substrate (Sigma, St. Louis, MO).

[0329] The solid surface reagent in the above assay is prepared by known techniques for attaching protein material to solid support material, such as polymeric beads, dip sticks, 96-well plate or filter material. These attachment methods generally include non-specific adsorption of the protein to the support or covalent attachment of the protein, typically through a free amine group, to a chemically reactive group on the solid support, such as an activated carboxyl, hydroxyl, or aldehyde group. Alternatively, streptavidin coated plates can be used in conjunction with biotinylated antigen(s).

[0330] Thus, the invention provides an assay system or kit for carrying out this diagnostic method. The kit generally includes a support with surface-bound recombinant antigens, and a reporter-labeled anti-human antibody for detecting surface-bound anti-antigen antibody.

**Uses of the Polynucleotides**

[0331] Each of the polynucleotides identified herein can be used in numerous ways as reagents. The following description should be considered exemplary and utilizes known techniques.

[0332] The polynucleotides of the present invention are useful for chromosome identification. There exists an ongoing need to identify new chromosome markers, since few chromosome marking reagents, based on actual sequence data (repeat polymorphisms), are presently available. Each sequence is specifically targeted to and can hybridize with a particular location on an individual human chromosome, thus each polynucleotide of the present invention can routinely be used as a chromosome marker using techniques known in the art. Table 1A, column 8 provides the chromosome location of some of the polynucleotides of the invention.

[0333] Briefly, sequences can be mapped to chromosomes by preparing PCR primers (preferably at least 15 bp (e.g., 15-25 bp) from the sequences shown in SEQ ID NO:X. Primers can optionally be selected using computer analysis so that primers do not span more than one predicted exon in the genomic DNA. These primers are then used for PCR screening of somatic cell hybrids containing individual human chromosomes. Only those hybrids containing the human gene corresponding to SEQ ID NO:X will yield an amplified fragment.

[0334] Similarly, somatic hybrids provide a rapid method of PCR mapping the polynucleotides to particular chromosomes. Three or more clones can be assigned per day using a single thermal cycler. Moreover, sublocalization of the polynucleotides can be achieved with panels of specific chromosome fragments. Other gene mapping strategies that can be used include in situ hybridization, prescreening with labeled flow-sorted chromosomes, preselection by hybridization to construct chromosome specific-cDNA libraries, and computer mapping techniques (See, e.g., Shuler, Trends Biotechnol 16:456-459 (1998) which is hereby incorporated by reference in its entirety).

[0335] Precise chromosomal location of the polynucleotides can also be achieved using fluorescence in situ hybridization (FISH) of a metaphase chromosomal spread. This technique uses polynucleotides as short as 500 or 600 bases; however, polynucleotides 2,000-4,000 bp are preferred. For a review of this technique, see Verma et al., "Human Chromosomes: a Manual of Basic Techniques," Pergamon Press, New York (1988).

- [0336] For chromosome mapping, the polynucleotides can be used individually (to mark a single chromosome or a single site on that chromosome) or in panels (for marking multiple sites and/or multiple chromosomes).
- [0337] Thus, the present invention also provides a method for chromosomal localization which involves (a) preparing PCR primers from the polynucleotide sequences in Table 1A and/or Table 2 and SEQ ID NO:X and (b) screening somatic cell hybrids containing individual chromosomes.
- [0338] The polynucleotides of the present invention would likewise be useful for radiation hybrid mapping, HAPPY mapping, and long range restriction mapping. For a review of these techniques and others known in the art, see, e.g. Dear, "Genome Mapping: A Practical Approach," IRL Press at Oxford University Press, London (1997); Aydin, J. Mol. Med. 77:691-694 (1999); Hacia et al., Mol. Psychiatry 3:483-492 (1998); Herrick et al., Chromosome Res. 7:409-423 (1999); Hamilton et al., Methods Cell Biol. 62:265-280 (2000); and/or Ott, J. Hered. 90:68-70 (1999), each of which is hereby incorporated by reference in its entirety.
- [0339] Once a polynucleotide has been mapped to a precise chromosomal location, the physical position of the polynucleotide can be used in linkage analysis. Linkage analysis establishes coinheritance between a chromosomal location and presentation of a particular disease. (Disease mapping data are found, for example, in V. McKusick, Mendelian Inheritance in Man (available on line through Johns Hopkins University Welch Medical Library).) Column 9 of Table 1A provides an OMIM reference identification number of diseases associated with the cytologic band disclosed in column 8 of Table 1A, as determined using techniques described herein and by reference to Table 5. Assuming 1 megabase mapping resolution and one gene per 20 kb, a cDNA precisely localized to a chromosomal region associated with the disease could be one of 50-500 potential causative genes.
- [0340] Thus, once coinheritance is established, differences in a polynucleotide of the invention and the corresponding gene between affected and unaffected individuals can be examined. First, visible structural alterations in the chromosomes, such as deletions or translocations, are examined in chromosome spreads or by PCR. If no structural alterations exist, the presence of point mutations are ascertained. Mutations observed in some or all affected individuals, but not in normal individuals, indicates that the mutations

may cause the disease. However, complete sequencing of the polypeptide and the corresponding gene from several normal individuals is required to distinguish the mutation from a polymorphism. If a new polymorphism is identified, this polymorphic polypeptide can be used for further linkage analysis.

[0341] Furthermore, increased or decreased expression of the gene in affected individuals as compared to unaffected individuals can be assessed using the polynucleotides of the invention. Any of these alterations (altered expression, chromosomal rearrangement, or mutation) can be used as a diagnostic or prognostic marker. Diagnostic and prognostic methods, kits and reagents encompassed by the present invention are briefly described below and more thoroughly elsewhere herein (see e.g., the sections labeled "Antibodies", "Diagnostic Assays", and "Methods for Detecting Immune/Hematopoietic-Related Disease, Including Cancer").

[0342] Thus, the invention also provides a diagnostic method useful during diagnosis of a disorder, involving measuring the expression level of polynucleotides of the present invention in cells or body fluid from an individual and comparing the measured gene expression level with a standard level of polynucleotide expression level, whereby an increase or decrease in the gene expression level compared to the standard is indicative of a disorder. Additional non-limiting examples of diagnostic methods encompassed by the present invention are more thoroughly described elsewhere herein (see, e.g., Example 12).

[0343] In still another embodiment, the invention includes a kit for analyzing samples for the presence of proliferative and/or cancerous polynucleotides derived from a test subject, as further described herein. In a general embodiment, the kit includes at least one polynucleotide probe containing a nucleotide sequence that will specifically hybridize with a polynucleotide of the invention and a suitable container. In a specific embodiment, the kit includes two polynucleotide probes defining an internal region of the polynucleotide of the invention, where each probe has one strand containing a 31'-mer-end internal to the region. In a further embodiment, the probes may be useful as primers for polymerase chain reaction amplification.

[0344] Where a diagnosis of a related disorder, including, for example, diagnosis of a tumor, has already been made according to conventional methods, the present invention is useful as a prognostic indicator, whereby patients exhibiting enhanced or depressed



polynucleotide of the invention expression will experience a worse clinical outcome relative to patients expressing the gene at a level nearer the standard level.

[0345] By "measuring the expression level of polynucleotides of the invention" is intended qualitatively or quantitatively measuring or estimating the level of the polypeptide of the invention or the level of the mRNA encoding the polypeptide of the invention in a first biological sample either directly (e.g., by determining or estimating absolute protein level or mRNA level) or relatively (e.g., by comparing to the polypeptide level or mRNA level in a second biological sample). Preferably, the polypeptide level or mRNA level in the first biological sample is measured or estimated and compared to a standard polypeptide level or mRNA level, the standard being taken from a second biological sample obtained from an individual not having the related disorder or being determined by averaging levels from a population of individuals not having a related disorder. As will be appreciated in the art, once a standard polypeptide level or mRNA level is known, it can be used repeatedly as a standard for comparison.

[0346] By "biological sample" is intended any biological sample obtained from an individual, body fluid, cell line, tissue culture, or other source which contains polypeptide of the present invention or the corresponding mRNA. As indicated, biological samples include body fluids (such as semen, lymph, vaginal pool, sera, plasma, urine, synovial fluid and spinal fluid) which contain the polypeptide of the present invention, and tissue sources found to express the polypeptide of the present invention. Methods for obtaining tissue biopsies and body fluids from mammals are well known in the art. Where the biological sample is to include mRNA, a tissue biopsy is the preferred source.

[0347] The method(s) provided above may preferably be applied in a diagnostic method and/or kits in which polynucleotides and/or polypeptides of the invention are attached to a solid support. In one exemplary method, the support may be a "gene chip" or a "biological chip" as described in U.S. Patents 5,837,832, 5,874,219, and 5,856,174. Further, such a gene chip with polynucleotides of the invention attached may be used to identify polymorphisms between the isolated polynucleotide sequences of the invention, with polynucleotides isolated from a test subject. The knowledge of such polymorphisms (i.e., their location, as well as, their existence) would be beneficial in identifying disease loci for many disorders, such as for example, in neural disorders, immune system disorders, muscular disorders, reproductive disorders, gastrointestinal disorders,

pulmonary disorders, digestive disorders, cardiovascular disorders, renal disorders, proliferative disorders, and/or cancerous diseases and conditions. Such a method is described in U.S. Patents 5,858,659 and 5,856,104. The U.S. Patents referenced *supra* are hereby incorporated by reference in their entirety herein.

[0348] The present invention encompasses polynucleotides of the present invention that are chemically synthesized, or reproduced as peptide nucleic acids (PNA), or according to other methods known in the art. The use of PNAs would serve as the preferred form if the polynucleotides of the invention are incorporated onto a solid support, or gene chip. For the purposes of the present invention, a peptide nucleic acid (PNA) is a polyamide type of DNA analog and the monomeric units for adenine, guanine, thymine and cytosine are available commercially (Perceptive Biosystems). Certain components of DNA, such as phosphorus, phosphorus oxides, or deoxyribose derivatives, are not present in PNAs. As disclosed by Nielsen et al., *Science* 254:1497 (1991); and Egholm et al., *Nature* 365:666 (1993), PNAs bind specifically and tightly to complementary DNA strands and are not degraded by nucleases. In fact, PNA binds more strongly to DNA than DNA itself does. This is probably because there is no electrostatic repulsion between the two strands, and also the polyamide backbone is more flexible. Because of this, PNA/DNA duplexes bind under a wider range of stringency conditions than DNA/DNA duplexes, making it easier to perform multiplex hybridization. Smaller probes can be used than with DNA due to the strong binding. In addition, it is more likely that single base mismatches can be determined with PNA/DNA hybridization because a single mismatch in a PNA/DNA 15-mer lowers the melting point ( $T_{sub.m}$ ) by 8°-20° C, vs. 4°-16° C for the DNA/DNA 15-mer duplex. Also, the absence of charge groups in PNA means that hybridization can be done at low ionic strengths and reduce possible interference by salt during the analysis.

[0349] The compounds of the present invention have uses which include, but are not limited to, detecting cancer in mammals. In particular the invention is useful during diagnosis of pathological cell proliferative neoplasias which include, but are not limited to: acute myelogenous leukemias including acute monocytic leukemia, acute myeloblastic leukemia, acute promyelocytic leukemia, acute myelomonocytic leukemia, acute erythroleukemia, acute megakaryocytic leukemia, and acute undifferentiated leukemia, etc.; and chronic myelogenous leukemias including chronic myelomonocytic leukemia,

chronic granulocytic leukemia, etc. Preferred mammals include monkeys, apes, cats, dogs, cows, pigs, horses, rabbits and humans. Particularly preferred are humans.

[0350] The compounds of the present invention have preferred uses which include, but are not limited to, detecting cancer of hematopoietic cells in mammals. In particular, the invention is useful during diagnosis of pathological cell proliferative neoplasias which include, but are not limited to: leukemia, acute myelogenous leukemia, chronic myelogenous leukemia, Hodgkin's disease, non-Hodgkin's lymphoma, acute lymphocytic anemia (ALL) Chronic lymphocyte leukemia, plasmacytomas, multiple myeloma, and Burkitt's lymphoma. Preferred mammals include monkeys, apes, cats, dogs, cows, pigs, horses, rabbits and humans. Particularly preferred are humans.

[0351] Pathological cell proliferative disorders are often associated with inappropriate activation of proto-oncogenes. (Gelmann, E. P. et al., "The Etiology of Acute Leukemia: Molecular Genetics and Viral Oncology," in Neoplastic Diseases of the Blood, Vol 1., Wiernik, P. H. et al. eds., 161-182 (1985)). Neoplasias are now believed to result from the qualitative alteration of a normal cellular gene product, or from the quantitative modification of gene expression by insertion into the chromosome of a viral sequence, by chromosomal translocation of a gene to a more actively transcribed region, or by some other mechanism. (Gelmann et al., *supra*) It is likely that mutated or altered expression of specific genes is involved in the pathogenesis of some leukemias, among other tissues and cell types. (Gelmann et al., *supra*) Indeed, the human counterparts of the oncogenes involved in some animal neoplasias have been amplified or translocated in some cases of human leukemia and carcinoma. (Gelmann et al., *supra*)

[0352] For example, c-myc expression is highly amplified in the non-lymphocytic leukemia cell line HL-60. When HL-60 cells are chemically induced to stop proliferation, the level of c-myc is found to be downregulated. (International Publication Number WO 91/15580). However, it has been shown that exposure of HL-60 cells to a DNA construct that is complementary to the 5' end of c-myc or c-myb blocks translation of the corresponding mRNAs which downregulates expression of the c-myc or c-myb proteins and causes arrest of cell proliferation and differentiation of the treated cells. (International Publication Number WO 91/15580; Wickstrom et al., Proc. Natl. Acad. Sci. 85:1028 (1988); Anfossi et al., Proc. Natl. Acad. Sci. 86:3379 (1989)). However, the skilled artisan would appreciate the present invention's usefulness is not be limited to treatment,

prevention, diagnosis and/or prognosis, of proliferative disorders of cells and tissues of hematopoietic origin, in light of the numerous cells and cell types of varying origins which are known to exhibit proliferative phenotypes. In preferred embodiments, the compounds and/or methods of the invention are used to treat, prevent, diagnose, and/or prognose, proliferative disorders of hematopoietic cells and tissues as well as cells and tissues of the immune system.

[0353] In addition to the foregoing, a polynucleotide of the present invention can be used to control gene expression through triple helix formation or through antisense DNA or RNA. Antisense techniques are discussed, for example, in Okano, J. *Neurochem.* 56: 560 (1991); "Oligodeoxynucleotides as Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL (1988). Triple helix formation is discussed in, for instance Lee et al., *Nucleic Acids Research* 6: 3073 (1979); Cooney et al., *Science* 241: 456 (1988); and Dervan et al., *Science* 251: 1360 (1991). Both methods rely on binding of the polynucleotide to a complementary DNA or RNA. For these techniques, preferred polynucleotides are usually oligonucleotides 20 to 40 bases in length and complementary to either the region of the gene involved in transcription (triple helix - see Lee et al., *Nucl. Acids Res.* 6:3073 (1979); Cooney et al., *Science* 241:456 (1988); and Dervan et al., *Science* 251:1360 (1991)) or to the mRNA itself (antisense - Okano, J. *Neurochem.* 56:560 (1991); Oligodeoxy-nucleotides as Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL (1988).) Triple helix formation optimally results in a shut-off of RNA transcription from DNA, while antisense RNA hybridization blocks translation of an mRNA molecule into polypeptide. The oligonucleotide described above can also be delivered to cells such that the antisense RNA or DNA may be expressed *in vivo* to inhibit production of polypeptide of the present invention antigens. Both techniques are effective in model systems, and the information disclosed herein can be used to design antisense or triple helix polynucleotides in an effort to treat disease, and in particular, for the treatment of proliferative diseases and/or conditions. Non-limiting antisense and triple helix methods encompassed by the present invention are more thoroughly described elsewhere herein (see, e.g., the section labeled "Antisense and Ribozyme (Antagonists)").

[0354] Polynucleotides of the present invention are also useful in gene therapy. One goal of gene therapy is to insert a normal gene into an organism having a defective gene, in an effort to correct the genetic defect. The polynucleotides disclosed in the present

invention offer a means of targeting such genetic defects in a highly accurate manner. Another goal is to insert a new gene that was not present in the host genome, thereby producing a new trait in the host cell. Additional non-limiting examples of gene therapy methods encompassed by the present invention are more thoroughly described elsewhere herein (see, e.g., the sections labeled "Gene Therapy Methods" and Examples 16, 17 and 18).

[0355] The polynucleotides are also useful for identifying individuals from minute biological samples. The United States military, for example, is considering the use of restriction fragment length polymorphism (RFLP) for identification of its personnel. In this technique, an individual's genomic DNA is digested with one or more restriction enzymes, and probed on a Southern blot to yield unique bands for identifying personnel. This method does not suffer from the current limitations of "Dog Tags" which can be lost, switched, or stolen, making positive identification difficult. The polynucleotides of the present invention can be used as additional DNA markers for RFLP.

[0356] The polynucleotides of the present invention can also be used as an alternative to RFLP, by determining the actual base-by-base DNA sequence of selected portions of an individual's genome. These sequences can be used to prepare PCR primers for amplifying and isolating such selected DNA, which can then be sequenced. Using this technique, individuals can be identified because each individual will have a unique set of DNA sequences. Once an unique ID database is established for an individual, positive identification of that individual, living or dead, can be made from extremely small tissue samples.

[0357] Forensic biology also benefits from using DNA-based identification techniques as disclosed herein. DNA sequences taken from very small biological samples such as tissues, e.g., hair or skin, or body fluids, e.g., blood, saliva, semen, synovial fluid, amniotic fluid, breast milk, lymph, pulmonary sputum or surfactant, urine, fecal matter, etc., can be amplified using PCR. In one prior art technique, gene sequences amplified from polymorphic loci, such as DQa class II HLA gene, are used in forensic biology to identify individuals. (Erllich, H., PCR Technology, Freeman and Co. (1992).) Once these specific polymorphic loci are amplified, they are digested with one or more restriction enzymes, yielding an identifying set of bands on a Southern blot probed with DNA

corresponding to the DQa class II HLA gene. Similarly, polynucleotides of the present invention can be used as polymorphic markers for forensic purposes.

[0358] There is also a need for reagents capable of identifying the source of a particular tissue. Such need arises, for example, in forensics when presented with tissue of unknown origin. Appropriate reagents can comprise, for example, DNA probes or primers prepared from the sequences of the present invention, specific to tissues, including but not limited to, those sequences referred to in Table 1A. Panels of such reagents can identify tissue by species and/or by organ type. In a similar fashion, these reagents can be used to screen tissue cultures for contamination. Additional non-limiting examples of such uses are further described herein.

[0359] Because immune/hematopoietic antigens are found expressed in hematopoietic tissues (e.g., bone marrow, fetal liver, and fetal spleen) or cells and tissues of the immune system (e.g., lymph nodes, spleen, B cells, T cells, monocytes, macrophages, dendritic cells, neutrophils, mast cells, basophils, and eosinophils), the polynucleotides of the present invention are also useful as hybridization probes for differential identification of the tissue(s) or cell type(s) present in a biological sample. Similarly, polypeptides and antibodies directed to polypeptides of the present invention are useful to provide immunological probes for differential identification of the tissue(s) (e.g., immunohistochemistry assays) or cell type(s) (e.g., immunocytochemistry assays). In a specific embodiment, the polynucleotides of the present invention are also useful as hybridization probes for differential identification of immune/hematopoietic tissue(s) or cell type(s) present in a biological sample. Similarly, polypeptides and antibodies directed to polypeptides of the present invention are useful to provide immunological probes for differential identification of immune/hematopoietic tissue(s) (e.g., immunohistochemistry assays) or cell type(s) (e.g., immunocytochemistry assays). In addition, for a number of disorders of the above tissues or cells, significantly higher or lower levels of gene expression of the polynucleotides/polypeptides of the present invention may be detected in certain tissues (e.g., tissues expressing polypeptides and/or polynucleotides of the present invention, for example, normal immune/hematopoietic or diseased immune/hematopoietic tissues, and/or those tissues/cells corresponding to the library source relating to a polynucleotide sequence of the invention as disclosed in column 7 of Table 1A, and/or cancerous and/or wounded tissues) or bodily fluids (e.g., semen, lymph, vaginal pool,

serum, plasma, urine, synovial fluid or spinal fluid) taken from an individual having such a disorder, relative to a "standard" gene expression level, i.e., the expression level in healthy tissue from an individual not having the disorder.

[0360] Thus, the invention provides a diagnostic method of a disorder, which involves: (a) assaying gene expression level in cells or body fluid of an individual; (b) comparing the gene expression level with a standard gene expression level, whereby an increase or decrease in the assayed gene expression level compared to the standard expression level is indicative of a disorder.

[0361] In the very least, the polynucleotides of the present invention can be used as molecular weight markers on Southern gels, as diagnostic probes for the presence of a specific mRNA in a particular cell type, as a probe to "subtract-out" known sequences in the process of discovering novel polynucleotides, for selecting and making oligomers for attachment to a "gene chip" or other support, to raise anti-DNA antibodies using DNA immunization techniques, and as an antigen to elicit an immune response.

#### Uses of the Polypeptides

[0362] Each of the polypeptides identified herein can be used in numerous ways. The following description should be considered exemplary and utilizes known techniques.

[0363] Polypeptides and antibodies directed to polypeptides of the present invention are useful to provide immunological probes for differential identification of the tissue(s) (e.g., immunohistochemistry assays such as, for example, ABC immunoperoxidase (Hsu et al., J. Histochem. Cytochem. 29:577-580 (1981)) or cell type(s) (e.g., immunocytochemistry assays).

[0364] Antibodies can be used to assay levels of polypeptides encoded by polynucleotides of the invention in a biological sample using classical immunohistological methods known to those of skill in the art (see, e.g., Jalkanen, et al., J. Cell. Biol. 101:976-985 (1985); Jalkanen, et al., J. Cell. Biol. 105:3087-3096 (1987)). Other antibody-based methods useful for detecting protein gene expression include immunoassays, such as the enzyme linked immunosorbent assay (ELISA) and the radioimmunoassay (RIA). Suitable antibody assay labels are known in the art and include enzyme labels, such as, glucose oxidase; radioisotopes, such as iodine ( $^{131}\text{I}$ ,  $^{125}\text{I}$ ,  $^{123}\text{I}$ ,  $^{121}\text{I}$ ), carbon ( $^{14}\text{C}$ ), sulfur ( $^{35}\text{S}$ ), tritium ( $^3\text{H}$ ), indium ( $^{115\text{m}}\text{In}$ ,  $^{113\text{m}}\text{In}$ ,  $^{112}\text{In}$ ,  $^{111}\text{In}$ ), and technetium

(<sup>99</sup>Tc, <sup>99m</sup>Tc), thallium (<sup>201</sup>Tl), gallium (<sup>68</sup>Ga, <sup>67</sup>Ga), palladium (<sup>103</sup>Pd), molybdenum (<sup>99</sup>Mo), xenon (<sup>133</sup>Xe), fluorine (<sup>18</sup>F), <sup>153</sup>Sm, <sup>177</sup>Lu, <sup>159</sup>Gd, <sup>149</sup>Pm, <sup>140</sup>La, <sup>175</sup>Yb, <sup>166</sup>Ho, <sup>90</sup>Y, <sup>47</sup>Sc, <sup>186</sup>Re, <sup>188</sup>Re, <sup>142</sup>Pr, <sup>105</sup>Rh, <sup>97</sup>Ru; luminescent labels, such as luminol; and fluorescent labels, such as fluorescein and rhodamine, and biotin.

[0365] In addition to assaying levels of polypeptide of the present invention in a biological sample, proteins can also be detected *in vivo* by imaging. Antibody labels or markers for *in vivo* imaging of protein include those detectable by X-radiography, NMR or ESR. For X-radiography, suitable labels include radioisotopes such as barium or cesium, which emit detectable radiation but are not overtly harmful to the subject. Suitable markers for NMR and ESR include those with a detectable characteristic spin, such as deuterium, which may be incorporated into the antibody by labeling of nutrients for the relevant hybridoma.

[0366] An immune/hematopoietic antigen-specific antibody or antibody fragment which has been labeled with an appropriate detectable imaging moiety, such as a radioisotope (for example, <sup>131</sup>I, <sup>112</sup>In, <sup>99m</sup>Tc, (<sup>131</sup>I, <sup>125</sup>I, <sup>123</sup>I, <sup>121</sup>I), carbon (<sup>14</sup>C), sulfur (<sup>35</sup>S), tritium (<sup>3</sup>H), indium (<sup>115m</sup>In, <sup>113m</sup>In, <sup>112</sup>In, <sup>111</sup>In), and technetium (<sup>99</sup>Tc, <sup>99m</sup>Tc), thallium (<sup>201</sup>Tl), gallium (<sup>68</sup>Ga, <sup>67</sup>Ga), palladium (<sup>103</sup>Pd), molybdenum (<sup>99</sup>Mo), xenon (<sup>133</sup>Xe), fluorine (<sup>18</sup>F, <sup>153</sup>Sm, <sup>177</sup>Lu, <sup>159</sup>Gd, <sup>149</sup>Pm, <sup>140</sup>La, <sup>175</sup>Yb, <sup>166</sup>Ho, <sup>90</sup>Y, <sup>47</sup>Sc, <sup>186</sup>Re, <sup>188</sup>Re, <sup>142</sup>Pr, <sup>105</sup>Rh, <sup>97</sup>Ru), a radio-opaque substance, or a material detectable by nuclear magnetic resonance, is introduced (for example, parenterally, subcutaneously or intraperitoneally) into the mammal to be examined for an immune system or hematopoietic disorder. It will be understood in the art that the size of the subject and the imaging system used will determine the quantity of imaging moiety needed to produce diagnostic images. In the case of a radioisotope moiety, for a human subject, the quantity of radioactivity injected will normally range from about 5 to 20 millicuries of <sup>99m</sup>Tc. The labeled antibody or antibody fragment will then preferentially accumulate at the location of cells which express the polypeptide encoded by a polynucleotide of the invention. *In vivo* tumor imaging is described in S.W. Burchiel et al., "Immunopharmacokinetics of Radiolabeled Antibodies and Their Fragments" (Chapter 13 in *Tumor Imaging: The Radiochemical Detection of Cancer*, S.W. Burchiel and B. A. Rhodes, eds., Masson Publishing Inc. (1982)).



[0367] In one embodiment, the invention provides a method for the specific delivery of compositions of the invention to cells by administering polypeptides of the invention (e.g., polypeptides encoded by polynucleotides of the invention and/or antibodies) that are associated with heterologous polypeptides or nucleic acids. In one example, the invention provides a method for delivering a therapeutic protein into the targeted cell. In another example, the invention provides a method for delivering a single stranded nucleic acid (e.g., antisense or ribozymes) or double stranded nucleic acid (e.g., DNA that can integrate into the cell's genome or replicate episomally and that can be transcribed) into the targeted cell.

[0368] In another embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention in association with toxins or cytotoxic prodrugs.

[0369] In a preferred embodiment, the invention provides a method for the specific destruction of immune/hematopoietic cells (e.g., aberrant immune/hematopoietic cells, immune/hematopoietic neoplasm) by administering polypeptides of the invention (e.g., polypeptides encoded by polynucleotides of the invention and/or antibodies) in association with toxins or cytotoxic prodrugs. In another preferred embodiment the invention provides a method for the specific destruction of tissues/cells corresponding to the library source relating to a polynucleotide sequence of the invention as disclosed in column 7 of Table 1A by administering polypeptides of the invention in association with toxins or cytotoxic prodrugs.

[0370] By "toxin" is meant one or more compounds that bind and activate endogenous cytotoxic effector systems, radioisotopes, holotoxins, modified toxins, catalytic subunits of toxins, or any molecules or enzymes not normally present in or on the surface of a cell that under defined conditions cause the cell's death. Toxins that may be used according to the methods of the invention include, but are not limited to, radioisotopes known in the art, compounds such as, for example, antibodies (or complement fixing containing portions thereof) that bind an inherent or induced endogenous cytotoxic effector system, thymidine kinase, endonuclease, RNase, alpha toxin, ricin, abrin, *Pseudomonas* exotoxin A, diphtheria toxin, saporin, momordin, gelonin, pokeweed antiviral protein, alpha-sarcin and cholera toxin. "Toxin" also includes a cytostatic or cytotoxic agent, a therapeutic agent or a radioactive metal ion, e.g., alpha-emitters such as, for example, <sup>213</sup>Bi, or other

radioisotopes such as, for example,  $^{103}\text{Pd}$ ,  $^{133}\text{Xe}$ ,  $^{131}\text{I}$ ,  $^{111}\text{In}$ ,  $^{68}\text{Ge}$ ,  $^{57}\text{Co}$ ,  $^{65}\text{Zn}$ ,  $^{85}\text{Sr}$ ,  $^{32}\text{P}$ ,  $^{35}\text{S}$ ,  $^{90}\text{Y}$ ,  $^{153}\text{Sm}$ ,  $^{153}\text{Gd}$ ,  $^{169}\text{Yb}$ ,  $^{51}\text{Cr}$ ,  $^{54}\text{Mn}$ ,  $^{75}\text{Se}$ ,  $^{113}\text{Sn}$ ,  $^{90}\text{Yttrium}$ ,  $^{117}\text{Tin}$ ,  $^{186}\text{Rhenium}$ ,  $^{166}\text{Holmium}$ , and  $^{188}\text{Rhenium}$ ; luminescent labels, such as luminol; and fluorescent labels, such as fluorescein and rhodamine, and biotin.

[0371] In a specific embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention or antibodies of the invention in association with the radioisotope  $^{90}\text{Y}$ . In another specific embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention or antibodies of the invention in association with the radioisotope  $^{111}\text{In}$ . In a further specific embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention or antibodies of the invention in association with the radioisotope  $^{131}\text{I}$ .

[0372] Techniques known in the art may be applied to label polypeptides of the invention (including antibodies). Such techniques include, but are not limited to, the use of bifunctional conjugating agents (see e.g., U.S. Patent Nos. 5,756,065; 5,714,631; 5,696,239; 5,652,361; 5,505,931; 5,489,425; 5,435,990; 5,428,139; 5,342,604; 5,274,119; 4,994,560; and 5,808,003; the contents of each of which are hereby incorporated by reference in its entirety).

[0373] Thus, the invention provides a diagnostic method of a disorder, which involves (a) assaying the expression level of a polypeptide of the present invention in cells or body fluid of an individual; and (b) comparing the assayed polypeptide expression level with a standard polypeptide expression level, whereby an increase or decrease in the assayed polypeptide expression level compared to the standard expression level is indicative of a disorder. With respect to cancer, the presence of a relatively high amount of transcript in biopsied tissue from an individual may indicate a predisposition for the development of the disease, or may provide a means for detecting the disease prior to the appearance of actual clinical symptoms. A more definitive diagnosis of this type may allow health professionals to employ preventative measures or aggressive treatment earlier thereby preventing the development or further progression of the cancer.

[0374] Moreover, polypeptides of the present invention can be used to treat or prevent diseases or conditions of/associated with hematopoiesis and/or the immune system such

as, for example, such as anemias, autoimmune diseases, immunodeficiencies, allergies, asthma, and inflammation) and infectious/parasitic diseases. In preferred embodiments, polynucleotides expressed in a particular tissue type (see, e.g., Table 1A, column 7) are used to diagnose, detect, prevent, treat and/or prognose disorders associated with the tissue type. For example, patients can be administered a polypeptide of the present invention in an effort to replace absent or decreased levels of the polypeptide (e.g., insulin), to supplement absent or decreased levels of a different polypeptide (e.g., hemoglobin S for hemoglobin B, SOD, catalase, DNA repair proteins), to inhibit the activity of a polypeptide (e.g., an oncogene or tumor suppressor), to activate the activity of a polypeptide (e.g., by binding to a receptor), to reduce the activity of a membrane bound receptor by competing with it for free ligand (e.g., soluble TNF receptors used in reducing inflammation), or to bring about a desired response (e.g., blood vessel growth inhibition, enhancement of the immune response to proliferative cells or tissues).

[0375] Similarly, antibodies directed to a polypeptide of the present invention can also be used to treat disease (as described *supra*, and elsewhere herein). For example, administration of an antibody directed to a polypeptide of the present invention can bind, and/or neutralize the polypeptide, and/or reduce overproduction of the polypeptide. Similarly, administration of an antibody can activate the polypeptide, such as by binding to a polypeptide bound to a membrane (receptor).

[0376] At the very least, the polypeptides of the present invention can be used as molecular weight markers on SDS-PAGE gels or on molecular sieve gel filtration columns using methods well known to those of skill in the art. Polypeptides can also be used to raise antibodies, which in turn are used to measure protein expression from a recombinant cell, as a way of assessing transformation of the host cell. Moreover, the polypeptides of the present invention can be used to test the biological activities described herein.

### **Diagnostic Assays**

[0377] The compounds of the present invention are useful for diagnosis, treatment, prevention and/or prognosis of various immune/hematopoietic related disorders in mammals, preferably humans. Such disorders include, but are not limited to such as anemias, autoimmune diseases, immunodeficiencies, allergies, asthma, and inflammation) and infectious/parasitic diseases. In preferred embodiments, polynucleotides expressed in

a particular tissue type (see, e.g., Table 1A, column 7) are used to diagnose, detect, prevent, treat and/or prognose disorders associated with the tissue type.

**[0378]** Immune/hematopoietic antigens are expressed hematopoietic tissues (e.g., bone marrow, fetal liver, and fetal spleen) or cells and tissues of the immune system (e.g., lymph nodes, spleen, B cells, T cells, monocytes, macrophages, dendritic cells, neutrophils, mast cells, basophils, and eosinophils). For a number of immune/hematopoietic-related disorders, substantially altered (increased or decreased) levels of immune/hematopoietic antigen gene expression can be detected in immune/hematopoietic tissue or other cells or bodily fluids (e.g., sera, plasma, urine, semen, synovial fluid or spinal fluid) taken from an individual having such a disorder, relative to a "standard" immune/hematopoietic antigen gene expression level, that is, the immune/hematopoietic antigen expression level in immune/hematopoietic tissues or bodily fluids from an individual not having the immune/hematopoietic-related disorder. Thus, the invention provides a diagnostic method useful during diagnosis of an immune/hematopoietic-related disorder, which involves measuring the expression level of the gene encoding the immune/hematopoietic associated polypeptide in immune/hematopoietic tissue or other cells or body fluid from an individual and comparing the measured gene expression level with a standard immune/hematopoietic antigens gene expression level, whereby an increase or decrease in the gene expression level(s) compared to the standard is indicative of an immune/hematopoietic-related disorder.

**[0379]** In specific embodiments, the invention provides a diagnostic method useful during diagnosis of a disorder of a normal or diseased tissue/cell source corresponding to column 7 of Table 1A, which involves measuring the expression level of the coding sequence of a polynucleotide sequence associated with this tissue/cell source as disclosed in Table 1A in the tissue/cell source or other cells or body fluid from an individual and comparing the expression level of the coding sequence with a standard expression level of the coding sequence of a polynucleotide sequence, whereby an increase or decrease in the gene expression level(s) compared to the standard is indicative of a disorder of a normal or diseased tissue/cell source corresponding to column 7 of Table 1A.

**[0380]** In particular, it is believed that certain tissues in mammals with cancer of cells of hematopoietic origin or cancer of tissues of the immune system (e.g., lymph nodes, spleen.

bone marrow) express significantly enhanced or reduced levels of normal or altered immune/hematopoietic antigen expression and mRNA encoding the immune/hematopoietic associated polypeptide when compared to a corresponding "standard" level. Further, it is believed that enhanced or depressed levels of the immune/hematopoietic associated polypeptide can be detected in certain body fluids (e.g., sera, plasma, urine, and spinal fluid) or cells or tissue from mammals with such a cancer when compared to sera from mammals of the same species not having the cancer.

[0381] For example, as disclosed herein, immune/hematopoietic associated polypeptides of the invention are expressed in hematopoietic tissues (e.g., bone marrow, fetal liver, and fetal spleen) or cells and tissues of the immune system (e.g., lymph nodes, spleen, B cells, T cells, monocytes, macrophages, dendritic cells, neutrophils, mast cells, basophils, and eosinophils). Accordingly, polynucleotides of the invention (e.g., polynucleotide sequences complementary to all or a portion of an immune/hematopoietic antigen mRNA nucleotide sequence of SEQ ID NO:X, nucleotide sequence encoding SEQ ID NO:Y, nucleotide sequence encoding a polypeptide encoded by SEQ ID NO:X and/or a nucleotide sequence delineated by columns 8 and 9 of Table 2) and antibodies (and antibody fragments) directed against the polypeptides of the invention may be used to quantitate or qualitate concentrations of cells expressing immune/hematopoietic antigens, preferably on their cell surfaces. These polynucleotides and antibodies additionally have diagnostic applications in detecting abnormalities in the level of immune/hematopoietic antigens gene expression, or abnormalities in the structure and/or temporal, tissue, cellular, or subcellular location of immune/hematopoietic antigens. These diagnostic assays may be performed *in vivo* or *in vitro*, such as, for example, on blood samples, biopsy tissue or autopsy tissue. In specific embodiments, polynucleotides and antibodies of the invention are used to quantitate or qualitate tissues/cells corresponding to the library source disclosed in column 7 of Table 1A expressing the corresponding immune/hematopoietic sequence disclosed in the same row of Table 1A, preferably on their cell surface.

[0382] Thus, the invention provides a diagnostic method useful during diagnosis of an immune/hematopoietic-related disorder, including cancers, which involves measuring the expression level of the gene encoding the immune/hematopoietic antigen polypeptide in immune/hematopoietic tissue or other cells or body fluid from an individual and

comparing the measured gene expression level with a standard immune/hematopoietic antigen gene expression level, whereby an increase or decrease in the gene expression level compared to the standard is indicative of an immune/hematopoietic-related disorder. In specific embodiments, polynucleotides and antibodies of the invention are used to quantitate or qualitate tissues/cells corresponding to the library source disclosed in column 7 of Table 1A expressing the corresponding immune/hematopoietic sequence disclosed in the same row of Table 1A, preferably on their cell surface.

[0383] Where a diagnosis of an immune/hematopoietic-related disease or disorder, including diagnosis of a tumor, has already been made according to conventional methods, the present invention is useful as a prognostic indicator, whereby patients exhibiting enhanced or depressed immune/hematopoietic antigen gene expression will experience a worse clinical outcome relative to patients expressing the gene at a level nearer the standard level.

[0384] By "assaying the expression level of the gene encoding the immune/hematopoietic associated polypeptide" is intended qualitatively or quantitatively measuring or estimating the level of the immune/hematopoietic antigen polypeptide or the level of the mRNA encoding the immune/hematopoietic antigen polypeptide in a first biological sample either directly (e.g., by determining or estimating absolute protein level or mRNA level) or relatively (e.g., by comparing to the immune/hematopoietic associated polypeptide level or mRNA level in a second biological sample). Preferably, the immune/hematopoietic antigen polypeptide expression level or mRNA level in the first biological sample is measured or estimated and compared to a standard immune/hematopoietic antigen polypeptide level or mRNA level, the standard being taken from a second biological sample obtained from an individual not having the disorder or being determined by averaging levels from a population of individuals not having an immune/hematopoietic -related disorder. As will be appreciated in the art, once a standard immune/hematopoietic antigen polypeptide level or mRNA level is known, it can be used repeatedly as a standard for comparison.

[0385] By "biological sample" is intended any biological sample obtained from an individual, cell line, tissue culture, or other source containing immune/hematopoietic antigen polypeptides (including portions thereof) or mRNA. As indicated, biological samples include body fluids (such as sera, plasma, urine, synovial fluid and spinal fluid)

which contain cells expressing immune/hematopoietic antigen polypeptides, hematopoietic cells and tissue, cells and tissues of the immune system, and other tissue sources found to express the full length or fragments thereof of an immune/hematopoietic antigen. Methods for obtaining tissue biopsies and body fluids from mammals are well known in the art. Where the biological sample is to include mRNA, a tissue biopsy is the preferred source.

[0386] Total cellular RNA can be isolated from a biological sample using any suitable technique such as the single-step guanidinium-thiocyanate-phenol-chloroform method described in Chomczynski and Sacchi, *Anal. Biochem.* 162:156-159 (1987). Levels of mRNA encoding the immune/hematopoietic antigen polypeptides are then assayed using any appropriate method. These include Northern blot analysis, S1 nuclease mapping, the polymerase chain reaction (PCR), reverse transcription in combination with the polymerase chain reaction (RT-PCR), and reverse transcription in combination with the ligase chain reaction (RT-LCR).

[0387] The present invention also relates to diagnostic assays such as quantitative and diagnostic assays for detecting levels of immune/hematopoietic antigen polypeptides, in a biological sample (e.g., cells and tissues), including determination of normal and abnormal levels of polypeptides. Thus, for instance, a diagnostic assay in accordance with the invention for detecting over-expression of immune/hematopoietic antigens compared to normal control tissue samples may be used to detect the presence of tumors. Assay techniques that can be used to determine levels of a polypeptide, such as an immune/hematopoietic antigen polypeptide of the present invention in a sample derived from a host are well-known to those of skill in the art. Such assay methods include radioimmunoassays, competitive-binding assays, Western Blot analysis and ELISA assays. Assaying immune/hematopoietic antigen polypeptide levels in a biological sample can occur using any art-known method.

[0388] Assaying immune/hematopoietic antigen polypeptide levels in a biological sample can occur using antibody-based techniques. For example, immune/hematopoietic antigen polypeptide expression in tissues can be studied with classical immunohistological methods (Jalkanen et al., *J. Cell. Biol.* 101:976-985 (1985); Jalkanen, M., et al., *J. Cell. Biol.* 105:3087-3096 (1987)). Other antibody-based methods useful for detecting immune/hematopoietic antigen polypeptide gene expression include immunoassays, such

as the enzyme linked immunosorbent assay (ELISA) and the radioimmunoassay (RIA). Suitable antibody assay labels are known in the art and include enzyme labels, such as, glucose oxidase, and radioisotopes, such as iodine ( $^{125}\text{I}$ ,  $^{121}\text{I}$ ), carbon ( $^{14}\text{C}$ ), sulfur ( $^{35}\text{S}$ ), tritium ( $^3\text{H}$ ), indium ( $^{112}\text{In}$ ), and technetium ( $^{99\text{m}}\text{Tc}$ ), and fluorescent labels, such as fluorescein and rhodamine, and biotin.

[0389] The tissue or cell type to be analyzed will generally include those which are known, or suspected, to express the immune/hematopoietic antigen gene (such as, for example, cells of the immune system or cancers of cells of hematopoietic origin (e.g., leukemias). The protein isolation methods employed herein may, for example, be such as those described in Harlow and Lane (Harlow, E. and Lane, D., 1988, "Antibodies: A Laboratory Manual", Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York), which is incorporated herein by reference in its entirety. The isolated cells can be derived from cell culture or from a patient. The analysis of cells taken from culture may be a necessary step in the assessment of cells that could be used as part of a cell-based gene therapy technique or, alternatively, to test the effect of compounds on the expression of the immune/hematopoietic antigen gene.

[0390] For example, antibodies, or fragments of antibodies, such as those described herein, may be used to quantitatively or qualitatively detect the presence of immune/hematopoietic antigen gene products or conserved variants or peptide fragments thereof. This can be accomplished, for example, by immunofluorescence techniques employing a fluorescently labeled antibody coupled with light microscopic, flow cytometric, or fluorimetric detection.

[0391] In a preferred embodiment, antibodies, or fragments of antibodies directed to any one or all of the predicted epitope domains of the immune/hematopoietic antigen polypeptides (Shown in Table 1A, column 6) may be used to quantitatively or qualitatively detect the presence of immune/hematopoietic antigen gene products or conserved variants or peptide fragments thereof. This can be accomplished, for example, by immunofluorescence techniques employing a fluorescently labeled antibody coupled with light microscopic, flow cytometric, or fluorimetric detection.

[0392] In an additional preferred embodiment, antibodies, or fragments of antibodies directed to a conformational epitope of an immune/hematopoietic antigen may be used to quantitatively or qualitatively detect the presence of immune/hematopoietic antigen gene



products or conserved variants or peptide fragments thereof. This can be accomplished, for example, by immunofluorescence techniques employing a fluorescently labeled antibody coupled with light microscopic, flow cytometric, or fluorimetric detection.

[0393] The antibodies (or fragments thereof), and/or immune/hematopoietic antigen polypeptides of the present invention may, additionally, be employed histologically, as in immunofluorescence, immunoelectron microscopy or non-immunological assays, for in situ detection of immune/hematopoietic antigen gene products or conserved variants or peptide fragments thereof. In situ detection may be accomplished by removing a histological specimen from a patient, and applying thereto a labeled antibody or immune/hematopoietic antigen polypeptide of the present invention. The antibody (or fragment thereof) or immune/hematopoietic antigen polypeptide is preferably applied by overlaying the labeled antibody (or fragment) onto a biological sample. Through the use of such a procedure, it is possible to determine not only the presence of the immune/hematopoietic antigen gene product, or conserved variants or peptide fragments, or immune/hematopoietic antigen polypeptide binding, but also its distribution in the examined tissue. Using the present invention, those of ordinary skill will readily perceive that any of a wide variety of histological methods (such as staining procedures) can be modified in order to achieve such in situ detection.

[0394] Immunoassays and non-immunoassays for immune/hematopoietic antigen gene products or conserved variants or peptide fragments thereof will typically comprise incubating a sample, such as a biological fluid, a tissue extract, freshly harvested cells, or lysates of cells which have been incubated in cell culture, in the presence of a detectably labeled antibody capable of binding immune/hematopoietic antigen gene products or conserved variants or peptide fragments thereof, and detecting the bound antibody by any of a number of techniques well-known in the art.

[0395] The biological sample may be brought in contact with and immobilized onto a solid phase support or carrier such as nitrocellulose, or other solid support which is capable of immobilizing cells, cell particles or soluble proteins. The support may then be washed with suitable buffers followed by treatment with the detectably labeled anti-immune/hematopoietic antigen antibody or detectable immune/hematopoietic antigen polypeptide. The solid phase support may then be washed with the buffer a second time to remove unbound antibody or polypeptide. Optionally the antibody is subsequently

labeled. The amount of bound label on solid support may then be detected by conventional means.

[0396] By "solid phase support or carrier" is intended any support capable of binding an antigen or an antibody. Well-known supports or carriers include glass, polystyrene, polypropylene, polyethylene, dextran, nylon, amylases, natural and modified celluloses, polyacrylamides, gabbros, and magnetite. The nature of the carrier can be either soluble to some extent or insoluble for the purposes of the present invention. The support material may have virtually any possible structural configuration so long as the coupled molecule is capable of binding to an antigen or antibody. Thus, the support configuration may be spherical, as in a bead, or cylindrical, as in the inside surface of a test tube, or the external surface of a rod. Alternatively, the surface may be flat such as a sheet, test strip, etc. Preferred supports include polystyrene beads. Those skilled in the art will know many other suitable carriers for binding antibody or antigen, or will be able to ascertain the same by use of routine experimentation.

[0397] The binding activity of a given lot of anti-immune/hematopoietic antigen antibody or immune/hematopoietic antigen polypeptide may be determined according to well known methods. Those skilled in the art will be able to determine operative and optimal assay conditions for each determination by employing routine experimentation.

[0398] In addition to assaying immune/hematopoietic antigen polypeptide levels or polynucleotide levels in a biological sample obtained from an individual, immune/hematopoietic antigen polypeptide or polynucleotide can also be detected *in vivo* by imaging. For example, in one embodiment of the invention, immune/hematopoietic antigen polypeptide and/or anti-immune/hematopoietic antigen antibodies are used to image immune system diseased cells or diseased hematopoietic cells, such as neoplasms. In another embodiment, immune/hematopoietic antigen polynucleotides of the invention (e.g., polynucleotides complementary to all or a portion of immune/hematopoietic antigen mRNA) and/or anti-immune/hematopoietic antigen antibodies (e.g., antibodies directed to any one or a combination of the epitopes of immune/hematopoietic antigens, antibodies directed to a conformational epitope of immune/hematopoietic antigens, antibodies directed to the full length polypeptide expressed on the cell surface of a mammalian cell) are used to image diseased or neoplastic cells of the immune system or disease or neoplastic cells associated with hematopoiesis.

[0399] Antibody labels or markers for *in vivo* imaging of immune/hematopoietic antigen polypeptides include those detectable by X-radiography, NMR, MRI, CAT-scans or ESR. For X-radiography, suitable labels include radioisotopes such as barium or cesium, which emit detectable radiation but are not overtly harmful to the subject. Suitable markers for NMR and ESR include those with a detectable characteristic spin, such as deuterium, which may be incorporated into the antibody by labeling of nutrients for the relevant hybridoma. Where *in vivo* imaging is used to detect enhanced levels of immune/hematopoietic antigen polypeptides for diagnosis in humans, it may be preferable to use human antibodies or "humanized" chimeric monoclonal antibodies. Such antibodies can be produced using techniques described herein or otherwise known in the art. For example methods for producing chimeric antibodies are known in the art. See, for review, Morrison, Science 229:1202 (1985); Oi et al., BioTechniques 4:214 (1986); Cabilly et al., U.S. Patent No. 4,816,567; Taniguchi et al., EP 171496; Morrison et al., EP 173494; Neuberger et al., WO 8601533; Robinson et al., WO 8702671; Boulianne et al., Nature 312:643 (1984); Neuberger et al., Nature 314:268 (1985).

[0400] Additionally, any immune/hematopoietic antigen polypeptides whose presence can be detected, can be administered. For example, immune/hematopoietic antigen polypeptides labeled with a radio-opaque or other appropriate compound can be administered and visualized *in vivo*, as discussed, above for labeled antibodies. Further such immune/hematopoietic antigen polypeptides can be utilized for *in vitro* diagnostic procedures.

[0401] An immune/hematopoietic antigen polypeptide-specific antibody or antibody fragment which has been labeled with an appropriate detectable imaging moiety, such as a radioisotope (for example,  $^{131}\text{I}$ ,  $^{112}\text{In}$ ,  $^{99\text{m}}\text{Tc}$ ), a radio-opaque substance, or a material detectable by nuclear magnetic resonance, is introduced (for example, parenterally, subcutaneously or intraperitoneally) into the mammal to be examined for an immune/hematopoietic-related disorder. It will be understood in the art that the size of the subject and the imaging system used will determine the quantity of imaging moiety needed to produce diagnostic images. In the case of a radioisotope moiety, for a human subject, the quantity of radioactivity injected will normally range from about 5 to 20 millicuries of  $^{99\text{m}}\text{Tc}$ . The labeled antibody or antibody fragment will then preferentially accumulate at the location of cells which contain immune/hematopoietic antigen protein.

*In vivo* tumor imaging is described in S.W. Burchiel et al., "Immunopharmacokinetics of Radiolabeled Antibodies and Their Fragments" (Chapter 13 in *Tumor Imaging: The Radiochemical Detection of Cancer*, S.W. Burchiel and B. A. Rhodes, eds., Masson Publishing Inc. (1982)).

[0402] With respect to antibodies, one of the ways in which the anti-immune/hematopoietic antigen antibody can be detectably labeled is by linking the same to an enzyme and using the linked product in an enzyme immunoassay (EIA) (Voller, A., "The Enzyme Linked Immunosorbent Assay (ELISA)", 1978, Diagnostic Horizons 2:1-7, Microbiological Associates Quarterly Publication, Walkersville, MD); Voller et al., J. Clin. Pathol. 31:507-520 (1978); Butler, J.E., Meth. Enzymol. 73:482-523 (1981); Maggio, E. (ed.), 1980, Enzyme Immunoassay, CRC Press, Boca Raton, FL; Ishikawa, E. et al., (eds.), 1981, Enzyme Immunoassay, Kaku Shoin, Tokyo). The enzyme which is bound to the antibody will react with an appropriate substrate, preferably a chromogenic substrate, in such a manner as to produce a chemical moiety which can be detected, for example, by spectrophotometric, fluorimetric or by visual means. Enzymes which can be used to detectably label the antibody include, but are not limited to, malate dehydrogenase, staphylococcal nuclease, delta-5-steroid isomerase, yeast alcohol dehydrogenase, alpha-glycerophosphate, dehydrogenase, triose phosphate isomerase, horseradish peroxidase, alkaline phosphatase, asparaginase, glucose oxidase, beta-galactosidase, ribonuclease, urease, catalase, glucose-6-phosphate dehydrogenase, glucoamylase and acetylcholinesterase. Additionally, the detection can be accomplished by colorimetric methods which employ a chromogenic substrate for the enzyme. Detection may also be accomplished by visual comparison of the extent of enzymatic reaction of a substrate in comparison with similarly prepared standards.

[0403] Detection may also be accomplished using any of a variety of other immunoassays. For example, by radioactively labeling the antibodies or antibody fragments, it is possible to detect immune/hematopoietic antigens through the use of a radioimmunoassay (RIA) (see, for example, Weintraub, B., Principles of Radioimmunoassays, Seventh Training Course on Radioligand Assay Techniques, The Endocrine Society, March, 1986, which is incorporated by reference herein). The radioactive isotope can be detected by means including, but not limited to, a gamma counter, a scintillation counter, or autoradiography.

- [0404] It is also possible to label the antibody with a fluorescent compound. When the fluorescently labeled antibody is exposed to light of the proper wave length, its presence can then be detected due to fluorescence. Among the most commonly used fluorescent labeling compounds are fluorescein isothiocyanate, rhodamine, phycoerythrin, phycocyanin, allophycocyanin, ophthaldehyde and fluorescamine.
- [0405] The antibody can also be detectably labeled using fluorescence emitting metals such as  $^{152}\text{Eu}$ , or others of the lanthanide series. These metals can be attached to the antibody using such metal chelating groups as diethylenetriaminepentacetic acid (DTPA) or ethylenediaminetetraacetic acid (EDTA).
- [0406] The antibody also can be detectably labeled by coupling it to a chemiluminescent compound. The presence of the chemiluminescent-tagged antibody is then determined by detecting the presence of luminescence that arises during the course of a chemical reaction. Examples of particularly useful chemiluminescent labeling compounds are luminol, isoluminol, thermotropic acridinium ester, imidazole, acridinium salt and oxalate ester.
- [0407] Likewise, a bioluminescent compound may be used to label the antibody of the present invention. Bioluminescence is a type of chemiluminescence found in biological systems in, which a catalytic protein increases the efficiency of the chemiluminescent reaction. The presence of a bioluminescent protein is determined by detecting the presence of luminescence. Important bioluminescent compounds for purposes of labeling are luciferin, luciferase and aequorin.

#### **Methods for Detecting Immune/Hematopoietic-Related Disease, Including Cancer**

- [0408] In general, an immune/hematopoietic-related disease or cancer may be detected in a patient based on the presence of one or more immune/hematopoietic antigen proteins of the invention and/or polynucleotides encoding such proteins in a biological sample (for example, blood, sera, urine, and/or tumor biopsies) obtained from the patient. In other words, such proteins and/or polynucleotides may be used as markers to indicate the presence or absence of an immune/hematopoietic-related disease or disorder, including cancer. Cancers that may be diagnosed, and/or prognosed using the compositions of the invention include but are not limited to, cancers of cells of hematopoietic origins such as leukemias and lymphomas. In addition, such proteins and/or polynucleotides may be useful

for the detection of other diseases and cancers, including cancers of tissues/cells corresponding to the library source disclosed in column 7 of Table 1A expressing the corresponding immune/hematopoietic sequence disclosed in the same row of Table 1A. The binding agents provided herein generally permit detection of the level of antigen that binds to the agent in the biological sample. Polynucleotide primers and probes may be used to detect the level of mRNA encoding immune/hematopoietic antigen polypeptides, which is also indicative of the presence or absence of an immune/hematopoietic-related disease or disorder, including cancer. In general, immune/hematopoietic antigen polypeptides should be present at a level that is at least three fold higher in diseased tissue than in normal tissue.

[0409] There are a variety of assay formats known to those of ordinary skill in the art for using a binding agent to detect polypeptide markers in a sample. See, e.g., Harlow and Lane, *supra*. In general, the presence or absence of an immune/hematopoietic-related disease in a patient may be determined by (a) contacting a biological sample obtained from a patient with a binding agent; (b) detecting in the sample a level of polypeptide that binds to the binding agent; and (c) comparing the level of polypeptide with a predetermined cut-off value.

[0410] In a preferred embodiment, the assay involves the use of binding agent immobilized on a solid support to bind to and remove the immune/hematopoietic antigen polypeptide of the invention from the remainder of the sample. The bound polypeptide may then be detected using a detection reagent that contains a reporter group and specifically binds to the binding agent/polypeptide complex. Such detection reagents may comprise, for example, a binding agent that specifically binds to the polypeptide or an antibody or other agent that specifically binds to the binding agent, such as an anti-immunoglobulin, protein G, protein A or a lectin. Alternatively, a competitive assay may be utilized, in which a polypeptide is labeled with a reporter group and allowed to bind to the immobilized binding agent after incubation of the binding agent with the sample. The extent to which components of the sample inhibit the binding of the labeled polypeptide to the binding agent is indicative of the reactivity of the sample with the immobilized binding agent. Suitable polypeptides for use within such assays include immune/hematopoietic antigen polypeptides and portions thereof, or antibodies, to which the binding agent binds, as described above.

[0411] The solid support may be any material known to those of skill in the art to which immune/hematopoietic antigen polypeptides of the invention may be attached. For example, the solid support may be a test well in a microtiter plate or a nitrocellulose or other suitable membrane. Alternatively, the support may be a bead or disc, such as glass fiberglass, latex or a plastic material such as polystyrene or polyvinylchloride. The support may also be a magnetic particle or a fiber optic sensor, such as those disclosed, for example, in U.S. Patent No. 5,359,681. The binding agent may be immobilized on the solid support using a variety of techniques known to those of skill in the art, which are amply described in the patent and scientific literature. In the context of the present invention, the term "immobilization" refers to both noncovalent association, such as adsorption, and covalent attachment (which may be a direct linkage between the agent and functional groups on the support or may be a linkage by way of a cross-linking agent). Immobilization by adsorption to a well in a microtiter plate or to a membrane is preferred. In such cases, adsorption may be achieved by contacting the binding agent, in a suitable buffer, with the solid support for the suitable amount of time. The contact time varies with temperature, but is typically between about 1 hour and about 1 day. In general, contacting a well of plastic microtiter plate (such as polystyrene or polyvinylchloride) with an amount of binding agent ranging from about 10 ng to about 10 ug, and preferably about 100 ng to about 1 ug, is sufficient to immobilize an adequate amount of binding agent.

[0412] Covalent attachment of binding agent to a solid support may generally be achieved by first reacting the support with a bifunctional reagent that will react with both the support and a functional group, such as a hydroxyl or amino group, on the binding agent. For example, the binding agent may be covalently attached to supports having an appropriate polymer coating using benzoquinone or by condensation of an aldehyde group on the support with an amine and an active hydrogen on the binding partner (see, e.g., Pierce Immunotechnology Catalog and Handbook, 1991, at A12-A13).

### Gene Therapy Methods

[0413] Also encompassed by the present invention are gene therapy methods for treating or preventing disorders, diseases and conditions. The gene therapy methods relate to the introduction of nucleic acid (DNA, RNA and antisense DNA or RNA) sequences into an animal to achieve expression of an immune/hematopoietic antigen of the present

invention. This method requires a polynucleotide which codes for a polypeptide of the present invention operatively linked to a promoter and any other genetic elements necessary for the expression of the polypeptide by the target tissue. Such gene therapy and delivery techniques are known in the art, see, for example, WO90/11092, which is herein incorporated by reference.

[0414] Thus, for example, cells from a patient may be engineered with a polynucleotide (DNA or RNA) comprising a promoter operably linked to a polynucleotide of the present invention *ex vivo*, with the engineered cells then being provided to a patient to be treated with the polypeptide of the present invention. Such methods are well-known in the art. For example, see Belldgrun, A., et al., J. Natl. Cancer Inst. 85: 207-216 (1993); Ferrantini, M. et al., Cancer Research 53: 1107-1112 (1993); Ferrantini, M. et al., J. Immunology 153: 4604-4615 (1994); Kaido, T., et al., Int. J. Cancer 60: 221-229 (1995); Ogura, H., et al., Cancer Research 50: 5102-5106 (1990); Santodonato, L., et al., Human Gene Therapy 7:1-10 (1996); Santodonato, L., et al., Gene Therapy 4:1246-1255 (1997); and Zhang, J.-F. et al., Cancer Gene Therapy 3: 31-38 (1996)), which are herein incorporated by reference. In one embodiment, the cells which are engineered are arterial cells. The arterial cells may be reintroduced into the patient through direct injection to the artery, the tissues surrounding the artery, or through catheter injection.

[0415] As discussed in more detail below, the polynucleotide constructs can be delivered by any method that delivers injectable materials to the cells of an animal, such as, injection into the interstitial space of tissues (heart, muscle, skin, lung, liver, and the like). The polynucleotide constructs may be delivered in a pharmaceutically acceptable liquid or aqueous carrier.

[0416] In one embodiment, the polynucleotide of the present invention is delivered as a naked polynucleotide. The term "naked" polynucleotide, DNA or RNA refers to sequences that are free from any delivery vehicle that acts to assist, promote or facilitate entry into the cell, including viral sequences, viral particles, liposome formulations, lipofectin or precipitating agents and the like. However, the polynucleotide of the present invention can also be delivered in liposome formulations and lipofectin formulations and the like can be prepared by methods well known to those skilled in the art. Such methods are described, for example, in U.S. Patent Nos. 5,593,972, 5,589,466, and 5,580,859, which are herein incorporated by reference.



- [0417] The polynucleotide vector constructs used in the gene therapy method are preferably constructs that will not integrate into the host genome nor will they contain sequences that allow for replication. Appropriate vectors include pWLNEO, pSV2CAT, pOG44, pXT1 and pSG available from Stratagene; pSVK3, pBPV, pMSG and pSVL available from Pharmacia; and pEF1/V5, pcDNA3.1, and pRc/CMV2 available from Invitrogen. Other suitable vectors will be readily apparent to the skilled artisan.
- [0418] Any strong promoter known to those skilled in the art can be used for driving the expression of the polynucleotide sequence. Suitable promoters include adenoviral promoters, such as the adenoviral major late promoter; or heterologous promoters, such as the cytomegalovirus (CMV) promoter; the respiratory syncytial virus (RSV) promoter; inducible promoters, such as the MMT promoter, the metallothionein promoter; heat shock promoters; the albumin promoter; the ApoAI promoter; human globin promoters; viral thymidine kinase promoters, such as the Herpes Simplex thymidine kinase promoter; retroviral LTRs; the b-actin promoter; and human growth hormone promoters. The promoter also may be the native promoter for the polynucleotide of the present invention.
- [0419] Unlike other gene therapy techniques, one major advantage of introducing naked nucleic acid sequences into target cells is the transitory nature of the polynucleotide synthesis in the cells. Studies have shown that non-replicating DNA sequences can be introduced into cells to provide production of the desired polypeptide for periods of up to six months.
- [0420] The polynucleotide construct can be delivered to the interstitial space of tissues within the an animal, including of muscle, skin, brain, lung, liver, spleen, bone marrow, thymus, heart, lymph, blood, bone, cartilage, pancreas, kidney, gall bladder, stomach, intestine, testis, ovary, uterus, rectum, nervous system, eye, gland, and connective tissue. Interstitial space of the tissues comprises the intercellular, fluid, mucopolysaccharide matrix among the reticular fibers of organ tissues, elastic fibers in the walls of vessels or chambers, collagen fibers of fibrous tissues, or that same matrix within connective tissue ensheathing muscle cells or in the lacunae of bone. It is similarly the space occupied by the plasma of the circulation and the lymph fluid of the lymphatic channels. Delivery to the interstitial space of muscle tissue is preferred for the reasons discussed below. They may be conveniently delivered by injection into the tissues comprising these cells. They are preferably delivered to and expressed in persistent, non-dividing cells which are

differentiated, although delivery and expression may be achieved in non-differentiated or less completely differentiated cells, such as, for example, stem cells of blood or skin fibroblasts. *In vivo* muscle cells are particularly competent in their ability to take up and express polynucleotides.

[0421] For the naked nucleic acid sequence injection, an effective dosage amount of DNA or RNA will be in the range of from about 0.05 mg/kg body weight to about 50 mg/kg body weight. Preferably the dosage will be from about 0.005 mg/kg to about 20 mg/kg and more preferably from about 0.05 mg/kg to about 5 mg/kg. Of course, as the artisan of ordinary skill will appreciate, this dosage will vary according to the tissue site of injection. The appropriate and effective dosage of nucleic acid sequence can readily be determined by those of ordinary skill in the art and may depend on the condition being treated and the route of administration.

[0422] The preferred route of administration is by the parenteral route of injection into the interstitial space of tissues. However, other parenteral routes may also be used, such as, inhalation of an aerosol formulation particularly for delivery to lungs or bronchial tissues, throat or mucous membranes of the nose. In addition, naked DNA constructs can be delivered to arteries during angioplasty by the catheter used in the procedure.

[0423] The naked polynucleotides are delivered by any method known in the art, including, but not limited to, direct needle injection at the delivery site, intravenous injection, topical administration, catheter infusion, and so-called "gene guns". These delivery methods are known in the art.

[0424] The constructs may also be delivered with delivery vehicles such as viral sequences, viral particles, liposome formulations, lipofectin, precipitating agents, etc. Such methods of delivery are known in the art.

[0425] In certain embodiments, the polynucleotide constructs are complexed in a liposome preparation. Liposomal preparations for use in the instant invention include cationic (positively charged), anionic (negatively charged) and neutral preparations. However, cationic liposomes are particularly preferred because a tight charge complex can be formed between the cationic liposome and the polyanionic nucleic acid. Cationic liposomes have been shown to mediate intracellular delivery of plasmid DNA (Felgner et al., Proc. Natl. Acad. Sci. USA (1987) 84:7413-7416, which is herein incorporated by reference); mRNA (Malone et al., Proc. Natl. Acad. Sci. USA (1989) 86:6077-6081,

which is herein incorporated by reference); and purified transcription factors (Debs et al., J. Biol. Chem. (1990) 265:10189-10192, which is herein incorporated by reference), in functional form.

[0426] Cationic liposomes are readily available. For example, N[1,2,3-dioleoyloxy)propyl]-N,N,N-triethylammonium (DOTMA) liposomes are particularly useful and are available under the trademark Lipofectin, from GIBCO BRL, Grand Island, N.Y., (see, also, Felgner et al., Proc. Natl Acad. Sci. USA (1987) 84:7413-7416, which is herein incorporated by reference). Other commercially available liposomes include transfectace (DDAB/DOPE) and DOTAP/DOPE (Boehringer).

[0427] Other cationic liposomes can be prepared from readily available materials using techniques well known in the art. See, e.g. PCT Publication No. WO 90/11092 (which is herein incorporated by reference) for a description of the synthesis of DOTAP (1,2-bis(oleoyloxy)-3-(trimethylammonio)propane) liposomes. Preparation of DOTMA liposomes is explained in the literature, see, e.g., P. Felgner et al., Proc. Natl. Acad. Sci. USA 84:7413-7417, which is herein incorporated by reference. Similar methods can be used to prepare liposomes from other cationic lipid materials.

[0428] Similarly, anionic and neutral liposomes are readily available, such as from Avanti Polar Lipids (Birmingham, Ala.), or can be easily prepared using readily available materials. Such materials include phosphatidyl choline, cholesterol, phosphatidyl ethanolamine, dioleoylphosphatidyl choline (DOPC), dioleoylphosphatidyl glycerol (DOPG), dioleoylphosphatidyl ethanolamine (DOPE), among others. These materials can also be mixed with the DOTMA and DOTAP starting materials in appropriate ratios. Methods for making liposomes using these materials are well known in the art.

[0429] For example, commercially dioleoylphosphatidyl choline (DOPC), dioleoylphosphatidyl glycerol (DOPG), and dioleoylphosphatidyl ethanolamine (DOPE) can be used in various combinations to make conventional liposomes, with or without the addition of cholesterol. Thus, for example, DOPG/DOPC vesicles can be prepared by drying 50 mg each of DOPG and DOPC under a stream of nitrogen gas into a sonication vial. The sample is placed under a vacuum pump overnight and is hydrated the following day with deionized water. The sample is then sonicated for 2 hours in a capped vial, using a Heat Systems model 350 sonicator equipped with an inverted cup (bath type) probe at the maximum setting while the bath is circulated at 15EC. Alternatively, negatively

charged vesicles can be prepared without sonication to produce multilamellar vesicles or by extrusion through nucleopore membranes to produce unilamellar vesicles of discrete size. Other methods are known and available to those of skill in the art.

[0430] The liposomes can comprise multilamellar vesicles (MLVs), small unilamellar vesicles (SUVs), or large unilamellar vesicles (LUVs), with SUVs being preferred. The various liposome-nucleic acid complexes are prepared using methods well known in the art. See, e.g., Straubinger et al., *Methods of Immunology* (1983), 101:512-527, which is herein incorporated by reference. For example, MLVs containing nucleic acid can be prepared by depositing a thin film of phospholipid on the walls of a glass tube and subsequently hydrating with a solution of the material to be encapsulated. SUVs are prepared by extended sonication of MLVs to produce a homogeneous population of unilamellar liposomes. The material to be entrapped is added to a suspension of preformed MLVs and then sonicated. When using liposomes containing cationic lipids, the dried lipid film is resuspended in an appropriate solution such as sterile water or an isotonic buffer solution such as 10 mM Tris/NaCl, sonicated, and then the preformed liposomes are mixed directly with the DNA. The liposome and DNA form a very stable complex due to binding of the positively charged liposomes to the cationic DNA. SUVs find use with small nucleic acid fragments. LUVs are prepared by a number of methods, well known in the art. Commonly used methods include  $\text{Ca}^{2+}$ -EDTA chelation (Papahadjopoulos et al., *Biochim. Biophys. Acta* (1975) 394:483; Wilson et al., *Cell* 17:77 (1979); ether injection (Deamer, D. and Bangham, A., *Biochim. Biophys. Acta* 443:629 (1976); Ostro et al., *Biochem. Biophys. Res. Commun.* 76:836 (1977); Fraley et al., *Proc. Natl. Acad. Sci. USA* 76:3348 (1979)); detergent dialysis (Enoch, H. and Strittmatter, P., *Proc. Natl. Acad. Sci. USA* 76:145 (1979)); and reverse-phase evaporation (REV) (Fraley et al., *J. Biol. Chem.* 255:10431 (1980); Szoka et al., *Proc. Natl. Acad. Sci. USA* 75:145 (1978); Schaefer-Ridder et al., *Science* 215:166 (1982)), which are herein incorporated by reference.

[0431] Generally, the ratio of DNA to liposomes will be from about 10:1 to about 1:10. Preferably, the ration will be from about 5:1 to about 1:5. More preferably, the ration will be about 3:1 to about 1:3. Still more preferably, the ratio will be about 1:1.

[0432] U.S. Patent No. 5,676,954 (which is herein incorporated by reference) reports on the injection of genetic material, complexed with cationic liposomes carriers, into mice. U.S.

Patent Nos. 4,897,355, 4,946,787, 5,049,386, 5,459,127, 5,589,466, 5,693,622, 5,580,859, 5,703,055, and international publication no. WO 94/9469 (which are herein incorporated by reference) provide cationic lipids for use in transfecting DNA into cells and mammals. U.S. Patent Nos. 5,589,466, 5,693,622, 5,580,859, 5,703,055, and International Publication No. WO 94/9469 provide methods for delivering DNA-cationic lipid complexes to mammals.

[0433] In certain embodiments, cells are engineered, *ex vivo* or *in vivo*, using a retroviral particle containing RNA which comprises a sequence encoding a polypeptide of the present invention. Retroviruses from which the retroviral plasmid vectors may be derived include, but are not limited to, Moloney Murine Leukemia Virus, spleen necrosis virus, Rous sarcoma Virus, Harvey Sarcoma Virus, avian leukosis virus, gibbon ape leukemia virus, human immunodeficiency virus, Myeloproliferative Sarcoma Virus, and mammary tumor virus.

[0434] The retroviral plasmid vector is employed to transduce packaging cell lines to form producer cell lines. Examples of packaging cells which may be transfected include, but are not limited to, the PE501, PA317, R-2, R-AM, PA12, T19-14X, VT-19-17-H2, RCRE, RCRIP, GP+E-86, GP+envAm12, and DAN cell lines as described in Miller, Human Gene Therapy 1:5-14 (1990), which is incorporated herein by reference in its entirety. The vector may transduce the packaging cells through any means known in the art. Such means include, but are not limited to, electroporation, the use of liposomes, and  $\text{CaPO}_4$  precipitation. In one alternative, the retroviral plasmid vector may be encapsulated into a liposome, or coupled to a lipid, and then administered to a host.

[0435] The producer cell line generates infectious retroviral vector particles which include polynucleotide encoding a polypeptide of the present invention. Such retroviral vector particles then may be employed, to transduce eukaryotic cells, either *in vitro* or *in vivo*. The transduced eukaryotic cells will express a polypeptide of the present invention.

[0436] In certain other embodiments, cells are engineered, *ex vivo* or *in vivo*, with polynucleotide contained in an adenovirus vector. Adenovirus can be manipulated such that it encodes and expresses a polypeptide of the present invention, and at the same time is inactivated in terms of its ability to replicate in a normal lytic viral life cycle. Adenovirus expression is achieved without integration of the viral DNA into the host cell chromosome, thereby alleviating concerns about insertional mutagenesis. Furthermore,

adenoviruses have been used as live enteric vaccines for many years with an excellent safety profile (Schwartz, et al., Am. Rev. Respir. Dis.109:233-238 (1974)). Finally, adenovirus mediated gene transfer has been demonstrated in a number of instances including transfer of alpha-1-antitrypsin and CFTR to the lungs of cotton rats (Rosenfeld et al., Science 252:431-434 (1991); Rosenfeld et al., Cell 68:143-155 (1991)). Furthermore, extensive studies to attempt to establish adenovirus as a causative agent in human cancer were uniformly negative (Green et al., Proc. Natl. Acad. Sci. USA 76:6606 (1979)).

[0437] Suitable adenoviral vectors useful in the present invention are described, for example, in Kozarsky and Wilson, Curr. Opin. Genet. Devel. 3:499-503 (1993); Rosenfeld et al., Cell 68:143-155 (1992); Engelhardt et al., Human Genet. Ther. 4:759-769 (1993); Yang et al., Nature Genet. 7:362-369 (1994); Wilson et al., Nature 365:691-692 (1993); and U.S. Patent No. 5,652,224, which are herein incorporated by reference. For example, the adenovirus vector Ad2 is useful and can be grown in human 293 cells. These cells contain the E1 region of adenovirus and constitutively express Ela and Elb, which complement the defective adenoviruses by providing the products of the genes deleted from the vector. In addition to Ad2, other varieties of adenovirus (e.g., Ad3, Ad5, and Ad7) are also useful in the present invention.

[0438] Preferably, the adenoviruses used in the present invention are replication deficient. Replication deficient adenoviruses require the aid of a helper virus and/or packaging cell line to form infectious particles. The resulting virus is capable of infecting cells and can express a polynucleotide of interest which is operably linked to a promoter, but cannot replicate in most cells. Replication deficient adenoviruses may be deleted in one or more of all or a portion of the following genes: E1a, E1b, E3, E4, E2a, or L1 through L5.

[0439] In certain other embodiments, the cells are engineered, ex vivo or *in vivo*, using an adeno-associated virus (AAV). AAVs are naturally occurring defective viruses that require helper viruses to produce infectious particles (Muzyczka, N., Curr. Topics in Microbiol. Immunol. 158:97 (1992)). It is also one of the few viruses that may integrate its DNA into non-dividing cells. Vectors containing as little as 300 base pairs of AAV can be packaged and can integrate, but space for exogenous DNA is limited to about 4.5 kb. Methods for producing and using such AAVs are known in the art. See, for example, U.S.

Patent Nos. 5,139,941, 5,173,414, 5,354,678, 5,436,146, 5,474,935, 5,478,745, and 5,589,377.

[0440] For example, an appropriate AAV vector for use in the present invention will include all the sequences necessary for DNA replication, encapsidation, and host-cell integration. The polynucleotide construct is inserted into the AAV vector using standard cloning methods, such as those found in Sambrook et al., *Molecular Cloning: A Laboratory Manual*, Cold Spring Harbor Press (1989). The recombinant AAV vector is then transfected into packaging cells which are infected with a helper virus, using any standard technique, including lipofection, electroporation, calcium phosphate precipitation, etc. Appropriate helper viruses include adenoviruses, cytomegaloviruses, vaccinia viruses, or herpes viruses. Once the packaging cells are transfected and infected, they will produce infectious AAV viral particles which contain the polynucleotide construct. These viral particles are then used to transduce eukaryotic cells, either *ex vivo* or *in vivo*. The transduced cells will contain the polynucleotide construct integrated into its genome, and will express a polypeptide of the invention.

[0441] Another method of gene therapy involves operably associating heterologous control regions and endogenous immune/hematopoietic antigen polynucleotide sequences (e.g., encoding an immune/hematopoietic antigen polypeptide of the present invention) via homologous recombination (see, e.g., U.S. Patent No. 5,641,670, issued June 24, 1997; International Publication No. WO 96/29411, published September 26, 1996; International Publication No. WO 94/12650, published August 4, 1994; Koller et al., *Proc. Natl. Acad. Sci. USA* 86:8932-8935 (1989); and Zijlstra et al., *Nature* 342:435-438 (1989), which are herein incorporated by reference. This method involves the activation of a gene which is present in the target cells, but which is not normally expressed in the cells, or is expressed at a lower level than desired.

[0442] Polynucleotide constructs are made, using standard techniques known in the art, which contain the promoter with targeting sequences flanking the promoter. Suitable promoters are described herein. The targeting sequence is sufficiently complementary to an endogenous sequence to permit homologous recombination of the promoter-targeting sequence with the endogenous sequence. The targeting sequence will be sufficiently near the 5' end of the desired endogenous polynucleotide sequence so the promoter will be operably linked to the endogenous sequence upon homologous recombination.

- [0443] The promoter and the targeting sequences can be amplified using PCR. Preferably, the amplified promoter contains distinct restriction enzyme sites on the 5' and 3' ends. Preferably, the 3' end of the first targeting sequence contains the same restriction enzyme site as the 5' end of the amplified promoter and the 5' end of the second targeting sequence contains the same restriction site as the 3' end of the amplified promoter. The amplified promoter and targeting sequences are digested and ligated together.
- [0444] The promoter-targeting sequence construct is delivered to the cells, either as naked polynucleotide, or in conjunction with transfection-facilitating agents, such as liposomes, viral sequences, viral particles, whole viruses, lipofection, precipitating agents, etc., described in more detail above. The P promoter-targeting sequence can be delivered by any method, included direct needle injection, intravenous injection, topical administration, catheter infusion, particle accelerators, etc. The methods are described in more detail below.
- [0445] The promoter-targeting sequence construct is taken up by cells. Homologous recombination between the construct and the endogenous sequence takes place, such that an endogenous sequence is placed under the control of the promoter. The promoter then drives the expression of the endogenous sequence.
- [0446] The polynucleotide encoding a polypeptide of the present invention may contain a secretory signal sequence that facilitates secretion of the protein. Typically, the signal sequence is positioned in the coding region of the polynucleotide to be expressed towards or at the 5' end of the coding region. The signal sequence may be homologous or heterologous to the immune/hematopoietic antigen polynucleotide of interest and may be homologous or heterologous to the cells to be transfected. Additionally, the signal sequence may be chemically synthesized using methods known in the art.
- [0447] Any mode of administration of any of the above-described polynucleotides constructs can be used so long as the mode results in the expression of one or more molecules in an amount sufficient to provide a therapeutic effect. This includes direct needle injection, systemic injection, catheter infusion, biolistic injectors, particle accelerators (i.e., "gene guns"), gelfoam sponge depots, other commercially available depot materials, osmotic pumps (e.g., Alza minipumps), oral or suppositorial solid (tablet or pill) pharmaceutical formulations, and decanting or topical applications during surgery. For example, direct injection of naked calcium phosphate-precipitated plasmid into rat



liver and rat spleen or a protein-coated plasmid into the portal vein has resulted in gene expression of the foreign gene in the rat livers (Kaneda et al., Science 243:375 (1989)).

[0448] A preferred method of local administration is by direct injection. Preferably, a recombinant molecule of the present invention complexed with a delivery vehicle is administered by direct injection into or locally within the area of arteries. Administration of a composition locally within the area of arteries refers to injecting the composition centimeters and preferably, millimeters within arteries.

[0449] Another method of local administration is to contact a polynucleotide construct of the present invention in or around a surgical wound. For example, a patient can undergo surgery and the polynucleotide construct can be coated on the surface of tissue inside the wound or the construct can be injected into areas of tissue inside the wound.

[0450] Therapeutic compositions useful in systemic administration, include recombinant molecules of the present invention complexed to a targeted delivery vehicle of the present invention. Suitable delivery vehicles for use with systemic administration comprise liposomes comprising ligands for targeting the vehicle to a particular site. In specific embodiments, suitable delivery vehicles for use with systemic administration comprise liposomes comprising polypeptides of the invention for targeting the vehicle to a particular site.

[0451] Preferred methods of systemic administration, include intravenous injection, aerosol, oral and percutaneous (topical) delivery. Intravenous injections can be performed using methods standard in the art. Aerosol delivery can also be performed using methods standard in the art (see, for example, Stribling et al., Proc. Natl. Acad. Sci. USA 189:11277-11281, 1992, which is incorporated herein by reference). Oral delivery can be performed by complexing a polynucleotide construct of the present invention to a carrier capable of withstanding degradation by digestive enzymes in the gut of an animal. Examples of such carriers, include plastic capsules or tablets, such as those known in the art. Topical delivery can be performed by mixing a polynucleotide construct of the present invention with a lipophilic reagent (e.g., DMSO) that is capable of passing into the skin.

[0452] Determining an effective amount of substance to be delivered can depend upon a number of factors including, for example, the chemical structure and biological activity of the substance, the age and weight of the animal, the precise condition requiring treatment and its severity, and the route of administration. The frequency of treatments depends

upon a number of factors, such as the amount of polynucleotide constructs administered per dose, as well as the health and history of the subject. The precise amount, number of doses, and timing of doses will be determined by the attending physician or veterinarian.

- [0453] Therapeutic compositions of the present invention can be administered to any animal, preferably to mammals and birds. Preferred mammals include humans, dogs, cats, mice, rats, rabbits sheep, cattle, horses and pigs, with humans being particularly preferred.

### **Biological Activities**

- [0454] Polynucleotides or polypeptides, or agonists or antagonists of the present invention, can be used in assays to test for one or more biological activities. If these polynucleotides or polypeptides, or agonists or antagonists of the present invention, do exhibit activity in a particular assay, it is likely that these molecules may be involved in the diseases associated with the biological activity. Thus, the polynucleotides and polypeptides, and agonists or antagonists could be used to treat, prevent diagnose and/or prognose the associated disease.

- [0455] The immune/hematopoietic antigen polynucleotides and polypeptides of the invention are predicted to have predominant expression in hematopoietic tissues (e.g., bone marrow, fetal liver, and fetal spleen) or cells and tissues of the immune system (e.g., lymph nodes, spleen, B cells, T cells, monocytes, macrophages, dendritic cells, neutrophils, mast cells, basophils, and eosinophils).

- [0456] Thus, the hematopoietic tissues (e.g., bone marrow, fetal liver, and fetal spleen) or cells and tissues of the immune system (e.g., lymph nodes, spleen, B cells, T cells, monocytes, macrophages, dendritic cells, neutrophils, mast cells, basophils, and eosinophils) antigens of the invention may be useful as therapeutic molecules. Each would be useful for diagnosis, detection, treatment and/or prevention of diseases or disorders of the immune system and or diseases and disorders of hematopoiesis, such as anemias, autoimmune diseases, immunodeficiencies, allergies, asthma, and inflammation) and infectious/parasitic diseases.

- [0457] In a preferred embodiment, polynucleotides of the invention (e.g., a nucleic acid sequence of SEQ ID NO:X or the complement thereof, or the cDNA sequence contained in Clone ID NO:Z, or fragments or variants thereof) and/or polypeptides of the invention (e.g., an amino acid sequence contained in SEQ ID NO:Y, an amino acid

sequence encoded by SEQ ID NO:X, or the complement thereof, an amino acid sequence encoded by the cDNA sequence contained in Clone ID NO:Z and fragments or variants thereof as described herein) are useful for the diagnosis, detection, treatment, and/or prevention of diseases or disorders of the tissues/cells corresponding to the library source disclosed in column 7 of Table 1A expressing the corresponding immune/hematopoietic sequence disclosed in the same row of Table 1A.

**[0458]** Particularly, the immune/hematopoietic antigens may be a useful therapeutic for cancers of cells of hematopoietic origin. Treatment, diagnosis, detection, and/or prevention of immune/hematopoietic-related disorders could be carried out using an immune/hematopoietic antigen or soluble form of an immune/hematopoietic antigen, an immune/hematopoietic antigen ligand, gene therapy, or ex vivo applications. Moreover, inhibitors of an immune/hematopoietic antigen, either blocking antibodies or mutant forms, could modulate the expression of the immune/hematopoietic antigen. These inhibitors may be useful to treat, diagnose, detect, and/or prevent diseases associated with the misregulation of an immune/hematopoietic antigen.

**[0459]** In one embodiment, the invention provides a method for the specific delivery of compositions of the invention to cells (e.g., normal or diseased immune/hematopoietic cells) by administering polypeptides of the invention (e.g., immune/hematopoietic antigen polypeptides or anti-immune/hematopoietic antigen antibodies) that are associated with heterologous polypeptides or nucleic acids. In one example, the invention provides a method for delivering a therapeutic protein into the targeted cell (e.g., an aberrant immune/hematopoietic cell or immune/hematopoietic cancer cell). In another example, the invention provides a method for delivering a single stranded nucleic acid (e.g., antisense or ribozymes) or double stranded nucleic acid (e.g., DNA that can integrate into the cell's genome or replicate episomally and that can be transcribed) into the targeted cell.

**[0460]** In another embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of aberrant immune/hematopoietic cells, including, but not limited to, immune/hematopoietic tumor cells) by administering polypeptides of the invention (e.g., immune/hematopoietic antigen polypeptides or fragments thereof, or anti-immune/hematopoietic antigen antibodies) in association with toxins or cytotoxic prodrugs.

[0461] By "toxin" is meant compounds that bind and activate endogenous cytotoxic effector systems, radioisotopes, holotoxins, modified toxins, catalytic subunits of toxins, cytotoxins (cytotoxic agents), or any molecules or enzymes not normally present in or on the surface of a cell that under defined conditions cause the cell's death. Toxins that may be used according to the methods of the invention include, but are not limited to, radioisotopes known in the art, compounds such as, for example, antibodies (or complement fixing containing portions thereof) that bind an inherent or induced endogenous cytotoxic effector system, thymidine kinase, endonuclease, RNase, alpha toxin, ricin, abrin, *Pseudomonas* exotoxin A, diphtheria toxin, saporin, momordin, gelonin, pokeweed antiviral protein, alpha-sarcin and cholera toxin. "Toxin" also includes a cytostatic or cytotoxic agent, a therapeutic agent or a radioactive metal ion, e.g., alpha-emitters such as, for example,  $^{213}\text{Bi}$ , or other radioisotopes such as, for example,  $^{103}\text{Pd}$ ,  $^{133}\text{Xe}$ ,  $^{131}\text{I}$ ,  $^{68}\text{Ge}$ ,  $^{57}\text{Co}$ ,  $^{65}\text{Zn}$ ,  $^{85}\text{Sr}$ ,  $^{32}\text{P}$ ,  $^{35}\text{S}$ ,  $^{90}\text{Y}$ ,  $^{153}\text{Sm}$ ,  $^{153}\text{Gd}$ ,  $^{169}\text{Yb}$ ,  $^{51}\text{Cr}$ ,  $^{54}\text{Mn}$ ,  $^{75}\text{Se}$ ,  $^{113}\text{Sn}$ ,  $^{90}\text{Yttrium}$ ,  $^{117}\text{Tin}$ ,  $^{186}\text{Rhenium}$ ,  $^{166}\text{Holmium}$ , and  $^{188}\text{Rhenium}$ ; luminescent labels, such as luminol; and fluorescent labels, such as fluorescein and rhodamine, and biotin.

[0462] Techniques known in the art may be applied to label antibodies of the invention. Such techniques include, but are not limited to, the use of bifunctional conjugating agents (see e.g., U.S. Patent Nos. 5,756,065; 5,714,631; 5,696,239; 5,652,361; 5,505,931; 5,489,425; 5,435,990; 5,428,139; 5,342,604; 5,274,119; 4,994,560; and 5,808,003; the contents of each of which are hereby incorporated by reference in its entirety). A cytotoxin or cytotoxic agent includes any agent that is detrimental to cells. Examples include paclitaxol, cytochalasin B, gramicidin D, ethidium bromide, emetine, mitomycin, etoposide, teniposide, vincristine, vinblastine, colchicin, doxorubicin, daunorubicin, dihydroxy anthracin dione, mitoxantrone, mithramycin, actinomycin D, 1-dehydrotestosterone, glucocorticoids, procaine, tetracaine, lidocaine, propranolol, and puromycin and analogs or homologs thereof. Therapeutic agents include, but are not limited to, antimetabolites (e.g., methotrexate, 6-mercaptopurine, 6-thioguanine, cytarabine, 5-fluorouracil decarbazine), alkylating agents (e.g., mechlorethamine, thioepa chlorambucil, melphalan, carmustine (BSNU) and lomustine (CCNU), cyclophosphamide, busulfan, dibromomannitol, streptozotocin, mitomycin C, and cis- dichlorodiamine platinum (II) (DDP) cisplatin), anthracyclines (e.g., daunorubicin (formerly daunomycin) and doxorubicin), antibiotics (e.g., dactinomycin (formerly actinomycin), bleomycin,

mithramycin, and anthramycin (AMC)), and anti-mitotic agents (e.g., vincristine and vinblastine).

[0463] By "cytotoxic prodrug" is meant a non-toxic compound that is converted by an enzyme, normally present in the cell, into a cytotoxic compound. Cytotoxic prodrugs that may be used according to the methods of the invention include, but are not limited to, glutamyl derivatives of benzoic acid mustard alkylating agent, phosphate derivatives of etoposide or mitomycin C, cytosine arabinoside, daunorubicin, and phenoxacetamide derivatives of doxorubicin.

[0464] It will be appreciated that conditions caused by a decrease in the standard or normal level of immune/hematopoietic antigen activity in an individual, particularly in individuals with immune/hematopoietic-related disorders, can be treated by administration of an immune/hematopoietic antigen polypeptide (e.g., such as, for example, the complete immune/hematopoietic antigen polypeptide, the soluble form of the extracellular domain of an immune/hematopoietic antigen polypeptide, or cells expressing the complete protein) or agonist. Thus, the invention also provides a method of treatment of an individual in need of an increased level of immune/hematopoietic antigen activity comprising administering to such an individual a pharmaceutical composition comprising an amount of an isolated immune/hematopoietic antigen polypeptide of the invention, or agonist thereof (e.g., an agonistic anti-immune/hematopoietic antigen antibody), effective to increase the immune/hematopoietic antigen activity level in such an individual.

[0465] It will also be appreciated that conditions caused by a increase in the standard or normal level of immune/hematopoietic antigen activity in an individual, particularly in an individual with an immune/hematopoietic-related disorder, can be treated by administration of immune/hematopoietic antigen polypeptides (e.g., such as, for example, the complete immune/hematopoietic antigen polypeptide, the soluble form of the extracellular domain of an immune/hematopoietic antigen polypeptide, or cells expressing the complete protein) or antagonist (e.g., an antagonistic anti-immune/hematopoietic antigen antibody). Thus, the invention also provides a method of treatment of an individual in need of a decreased level of immune/hematopoietic antigen activity comprising administering to such an individual a pharmaceutical composition comprising an amount of an isolated immune/hematopoietic antigen polypeptide of the invention, or antagonist thereof (e.g., an antagonistic anti-immune/hematopoietic antigen antibody),

effective to decrease the immune/hematopoietic antigen activity level in such an individual.

[0466] In certain embodiments, a polypeptide of the invention, or polynucleotides, antibodies, agonists, or antagonists corresponding to that polypeptide, may be used to diagnose and/or prognose diseases and/or disorders associated with the tissue(s) in which the polypeptide of the invention is expressed, including one, two, three, four, five, or more tissues disclosed in Table 1A, column 7 (Tissue Distribution Library Code).

[0467] More generally, polynucleotides, translation products and antibodies corresponding to this gene may be useful for the diagnosis, prognosis, prevention, and/or treatment of diseases and/or disorders associated with the following systems.

### **Immune Activity**

[0468] Polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, diagnosing and/or prognosing diseases, disorders, and/or conditions of the immune system, by, for example, activating or inhibiting the proliferation, differentiation, or mobilization (chemotaxis) of immune cells. Immune cells develop through a process called hematopoiesis, producing myeloid (platelets, red blood cells, neutrophils, and macrophages) and lymphoid (B and T lymphocytes) cells from pluripotent stem cells. The etiology of these immune diseases, disorders, and/or conditions may be genetic, somatic, such as cancer and some autoimmune diseases, acquired (e.g., by chemotherapy or toxins), or infectious. Moreover, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention can be used as a marker or detector of a particular immune system disease or disorder.

[0469] In another embodiment, a polypeptide of the invention, or polynucleotides, antibodies, agonists, or antagonists corresponding to that polypeptide, may be used to treat diseases and disorders of the immune system and/or to inhibit or enhance an immune response generated by cells associated with the tissue(s) in which the polypeptide of the invention is expressed, including one, two, three, four, five, or more tissues disclosed in Table 1A, column 7 (Tissue Distribution Library Code).

[0470] Polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, diagnosing, and/or prognosing immunodeficiencies, including both congenital and acquired immunodeficiencies. Examples of B cell immunodeficiencies in which immunoglobulin levels B cell function and/or B cell numbers are decreased include: X-linked agammaglobulinemia (Bruton's disease), X-linked infantile agammaglobulinemia, X-linked immunodeficiency with hyper IgM, non X-linked immunodeficiency with hyper IgM, X-linked lymphoproliferative syndrome (XLP), agammaglobulinemia including congenital and acquired agammaglobulinemia, adult onset agammaglobulinemia, late-onset agammaglobulinemia, dysgammaglobulinemia, hypogammaglobulinemia, unspecified hypogammaglobulinemia, recessive agammaglobulinemia (Swiss type), Selective IgM deficiency, selective IgA deficiency, selective IgG subclass deficiencies, IgG subclass deficiency (with or without IgA deficiency), Ig deficiency with increased IgM, IgG and IgA deficiency with increased IgM, antibody deficiency with normal or elevated Igs, Ig heavy chain deletions, kappa chain deficiency, B cell lymphoproliferative disorder (BLPD), common variable immunodeficiency (CVID), common variable immunodeficiency (CVI) (acquired), and transient hypogammaglobulinemia of infancy.

[0471] In specific embodiments, ataxia-telangiectasia or conditions associated with ataxia-telangiectasia are treated, prevented, diagnosed, and/or prognosing using the polypeptides or polynucleotides of the invention, and/or agonists or antagonists thereof.

[0472] Examples of congenital immunodeficiencies in which T cell and/or B cell function and/or number is decreased include, but are not limited to: DiGeorge anomaly, severe combined immunodeficiencies (SCID) (including, but not limited to, X-linked SCID, autosomal recessive SCID, adenosine deaminase deficiency, purine nucleoside phosphorylase (PNP) deficiency, Class II MHC deficiency (Bare lymphocyte syndrome), Wiskott-Aldrich syndrome, and ataxia telangiectasia), thymic hypoplasia, third and fourth pharyngeal pouch syndrome, 22q11.2 deletion, chronic mucocutaneous candidiasis, natural killer cell deficiency (NK), idiopathic CD4+ T-lymphocytopenia, immunodeficiency with predominant T cell defect (unspecified), and unspecified immunodeficiency of cell mediated immunity.

[0473] In specific embodiments, DiGeorge anomaly or conditions associated with DiGeorge anomaly are treated, prevented, diagnosed, and/or prognosed using polypeptides or polynucleotides of the invention, or antagonists or agonists thereof.

[0474] Other immunodeficiencies that may be treated, prevented, diagnosed, and/or prognosed using polypeptides or polynucleotides of the invention, and/or agonists or antagonists thereof, include, but are not limited to, chronic granulomatous disease, Chédiak-Higashi syndrome, myeloperoxidase deficiency, leukocyte glucose-6-phosphate dehydrogenase deficiency, X-linked lymphoproliferative syndrome (XLP), leukocyte adhesion deficiency, complement component deficiencies (including C1, C2, C3, C4, C5, C6, C7, C8 and/or C9 deficiencies), reticular dysgenesis, thymic aplasia-aplasia, immunodeficiency with thymoma, severe congenital leukopenia, dysplasia with immunodeficiency, neonatal neutropenia, short limbed dwarfism, and Nezelof syndrome-combined immunodeficiency with Igs.

[0475] In a preferred embodiment, the immunodeficiencies and/or conditions associated with the immunodeficiencies recited above are treated, prevented, diagnosed and/or prognosed using polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention.

[0476] In a preferred embodiment polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention could be used as an agent to boost immunoresponsiveness among immunodeficient individuals. In specific embodiments, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention could be used as an agent to boost immunoresponsiveness among B cell and/or T cell immunodeficient individuals.

[0477] The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, diagnosing and/or prognosing autoimmune disorders. Many autoimmune disorders result from inappropriate recognition of self as foreign material by immune cells. This inappropriate recognition results in an immune response leading to the destruction of the host tissue. Therefore, the administration of polynucleotides and polypeptides of the invention that can inhibit an immune response, particularly the proliferation, differentiation, or chemotaxis of T-cells, may be an effective therapy in preventing autoimmune disorders.



[0478] Autoimmune diseases or disorders that may be treated, prevented, diagnosed and/or prognosed by polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention include, but are not limited to, one or more of the following: systemic lupus erythematosus, rheumatoid arthritis, ankylosing spondylitis, multiple sclerosis, autoimmune thyroiditis, Hashimoto's thyroiditis, autoimmune hemolytic anemia, thrombocytopenia, autoimmune thrombocytopenia purpura, autoimmune neonatal thrombocytopenia, idiopathic thrombocytopenia purpura (e.g., Henoch-Schoenlein purpura), autoimmune cytopenia, Goodpasture's syndrome, Pemphigus vulgaris, myasthenia gravis, Grave's disease (hyperthyroidism), and insulin-resistant diabetes mellitus.

[0479] Additional disorders that are likely to have an autoimmune component that may be treated, prevented, and/or diagnosed with the compositions of the invention include, but are not limited to, type II collagen-induced arthritis, antiphospholipid syndrome, dermatitis, allergic encephalomyelitis, myocarditis, relapsing polychondritis, rheumatic heart disease, neuritis, uveitis, ophthalmia, polyendocrinopathies, Reiter's Disease, Stiff-Man Syndrome, autoimmune pulmonary inflammation, autism, Guillain-Barre Syndrome, insulin dependent diabetes mellitus, and autoimmune inflammatory eye disorders.

[0480] Additional disorders that are likely to have an autoimmune component that may be treated, prevented, diagnosed and/or prognosed with the compositions of the invention include, but are not limited to, scleroderma with anti-collagen antibodies (often characterized, e.g., by nucleolar and other nuclear antibodies), mixed connective tissue disease (often characterized, e.g., by antibodies to extractable nuclear antigens (e.g., ribonucleoprotein)), polymyositis (often characterized, e.g., by nonhistone ANA), pernicious anemia (often characterized, e.g., by antiparietal cell, microsomes, and intrinsic factor antibodies), idiopathic Addison's disease (often characterized, e.g., by humoral and cell-mediated adrenal cytotoxicity, infertility (often characterized, e.g., by antispermatozoal antibodies), glomerulonephritis (often characterized, e.g., by glomerular basement membrane antibodies or immune complexes), bullous pemphigoid (often characterized, e.g., by IgG and complement in basement membrane), Sjogren's syndrome (often characterized, e.g., by multiple tissue antibodies, and/or a specific nonhistone ANA (SS-B)), diabetes mellitus (often characterized, e.g., by cell-mediated and humoral islet

cell antibodies), and adrenergic drug resistance (including adrenergic drug resistance with asthma or cystic fibrosis) (often characterized, e.g., by beta-adrenergic receptor antibodies).

[0481] Additional disorders that may have an autoimmune component that may be treated, prevented, diagnosed and/or prognosed with the compositions of the invention include, but are not limited to, chronic active hepatitis (often characterized, e.g., by smooth muscle antibodies), primary biliary cirrhosis (often characterized, e.g., by mitochondria antibodies), other endocrine gland failure (often characterized, e.g., by specific tissue antibodies in some cases), vitiligo (often characterized, e.g., by melanocyte antibodies), vasculitis (often characterized, e.g., by Ig and complement in vessel walls and/or low serum complement), post-MI (often characterized, e.g., by myocardial antibodies), cardiomyopathy syndrome (often characterized, e.g., by myocardial antibodies), urticaria (often characterized, e.g., by IgG and IgM antibodies to IgE), atopic dermatitis (often characterized, e.g., by IgG and IgM antibodies to IgE), asthma (often characterized, e.g., by IgG and IgM antibodies to IgE), and many other inflammatory, granulomatous, degenerative, and atrophic disorders.

[0482] In a preferred embodiment, the autoimmune diseases and disorders and/or conditions associated with the diseases and disorders recited above are treated, prevented, diagnosed and/or prognosed using for example, antagonists or agonists, polypeptides or polynucleotides, or antibodies of the present invention. In a specific preferred embodiment, rheumatoid arthritis is treated, prevented, and/or diagnosed using polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention.

[0483] In another specific preferred embodiment, systemic lupus erythematosus is treated, prevented, and/or diagnosed using polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention. In another specific preferred embodiment, idiopathic thrombocytopenia purpura is treated, prevented, and/or diagnosed using polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention.

[0484] In another specific preferred embodiment IgA nephropathy is treated, prevented, and/or diagnosed using polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention.

- [0485] In a preferred embodiment, the autoimmune diseases and disorders and/or conditions associated with the diseases and disorders recited above are treated, prevented, diagnosed and/or prognosed using polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention.
- [0486] In preferred embodiments, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a immunosuppressive agent(s).
- [0487] Polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, prognosing, and/or diagnosing diseases, disorders, and/or conditions of hematopoietic cells. Polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention could be used to increase differentiation and proliferation of hematopoietic cells, including the pluripotent stem cells, in an effort to treat or prevent those diseases, disorders, and/or conditions associated with a decrease in certain (or many) types hematopoietic cells, including but not limited to, leukopenia, neutropenia, anemia, and thrombocytopenia. Alternatively, Polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention could be used to increase differentiation and proliferation of hematopoietic cells, including the pluripotent stem cells, in an effort to treat or prevent those diseases, disorders, and/or conditions associated with an increase in certain (or many) types of hematopoietic cells, including but not limited to, histiocytosis.
- [0488] Allergic reactions and conditions, such as asthma (particularly allergic asthma) or other respiratory problems, may also be treated, prevented, diagnosed and/or prognosed using polypeptides, antibodies, or polynucleotides of the invention, and/or agonists or antagonists thereof. Moreover, these molecules can be used to treat, prevent, prognose, and/or diagnose anaphylaxis, hypersensitivity to an antigenic molecule, or blood group incompatibility.
- [0489] Additionally, polypeptides or polynucleotides of the invention, and/or agonists or antagonists thereof, may be used to treat, prevent, diagnose and/or prognose IgE-mediated allergic reactions. Such allergic reactions include, but are not limited to, asthma, rhinitis, and eczema. In specific embodiments, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used to modulate IgE concentrations in vitro or in vivo.

[0490] Moreover, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention have uses in the diagnosis, prognosis, prevention, and/or treatment of inflammatory conditions. For example, since polypeptides, antibodies, or polynucleotides of the invention, and/or agonists or antagonists of the invention may inhibit the activation, proliferation and/or differentiation of cells involved in an inflammatory response, these molecules can be used to prevent and/or treat chronic and acute inflammatory conditions. Such inflammatory conditions include, but are not limited to, for example, inflammation associated with infection (e.g., septic shock, sepsis, or systemic inflammatory response syndrome), ischemia-reperfusion injury, endotoxin lethality, complement-mediated hyperacute rejection, nephritis, cytokine or chemokine induced lung injury, inflammatory bowel disease, Crohn's disease, over production of cytokines (e.g., TNF or IL-1.), respiratory disorders (e.g., asthma and allergy); gastrointestinal disorders (e.g., inflammatory bowel disease); cancers (e.g., gastric, ovarian, lung, bladder, liver, and breast); CNS disorders (e.g., multiple sclerosis; ischemic brain injury and/or stroke, traumatic brain injury, neurodegenerative disorders (e.g., Parkinson's disease and Alzheimer's disease); AIDS-related dementia; and prion disease); cardiovascular disorders (e.g., atherosclerosis, myocarditis, cardiovascular disease, and cardiopulmonary bypass complications); as well as many additional diseases, conditions, and disorders that are characterized by inflammation (e.g., hepatitis, rheumatoid arthritis, gout, trauma, pancreatitis, sarcoidosis, dermatitis, renal ischemia-reperfusion injury, Grave's disease, systemic lupus erythematosus, diabetes mellitus, and allogenic transplant rejection).

[0491] Because inflammation is a fundamental defense mechanism, inflammatory disorders can effect virtually any tissue of the body. Accordingly, polynucleotides, polypeptides, and antibodies of the invention, as well as agonists or antagonists thereof, have uses in the treatment of tissue-specific inflammatory disorders, including, but not limited to, adenitis, alveolitis, angiocholecystitis, appendicitis, balanitis, blepharitis, bronchitis, bursitis, carditis, cellulitis, cervicitis, cholecystitis, chondritis, cochitis, colitis, conjunctivitis, cystitis, dermatitis, diverticulitis, encephalitis, endocarditis, esophagitis, eustachitis, fibrositis, folliculitis, gastritis, gastroenteritis, gingivitis, glossitis, hepatosplenitis, keratitis, labyrinthitis, laryngitis, lymphangitis, mastitis, media otitis, meningitis, metritis, mucitis, myocarditis, myositis, myringitis, nephritis, neuritis,

orchitis, osteochondritis, otitis, pericarditis, peritendonitis, peritonitis, pharyngitis, phlebitis, poliomyelitis, prostatitis, pulpitis, retinitis, rhinitis, salpingitis, scleritis, sclerochoroiditis, scrotitis, sinusitis, spondylitis, steatitis, stomatitis, synovitis, syringitis, tendonitis, tonsillitis, urethritis, and vaginitis.

[0492] In specific embodiments, polypeptides, antibodies, or polynucleotides of the invention, and/or agonists or antagonists thereof, are useful to diagnose, prognose, prevent, and/or treat organ transplant rejections and graft-versus-host disease. Organ rejection occurs by host immune cell destruction of the transplanted tissue through an immune response. Similarly, an immune response is also involved in GVHD, but, in this case, the foreign transplanted immune cells destroy the host tissues. Polypeptides, antibodies, or polynucleotides of the invention, and/or agonists or antagonists thereof, that inhibit an immune response, particularly the activation, proliferation, differentiation, or chemotaxis of T-cells, may be an effective therapy in preventing organ rejection or GVHD. In specific embodiments, polypeptides, antibodies, or polynucleotides of the invention, and/or agonists or antagonists thereof, that inhibit an immune response, particularly the activation, proliferation, differentiation, or chemotaxis of T-cells, may be an effective therapy in preventing experimental allergic and hyperacute xenograft rejection.

[0493] In other embodiments, polypeptides, antibodies, or polynucleotides of the invention, and/or agonists or antagonists thereof, are useful to diagnose, prognose, prevent, and/or treat immune complex diseases, including, but not limited to, serum sickness, post streptococcal glomerulonephritis, polyarteritis nodosa, and immune complex-induced vasculitis.

[0494] Polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the invention can be used to treat, detect, and/or prevent infectious agents. For example, by increasing the immune response, particularly increasing the proliferation activation and/or differentiation of B and/or T cells, infectious diseases may be treated, detected, and/or prevented. The immune response may be increased by either enhancing an existing immune response, or by initiating a new immune response. Alternatively, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may also directly inhibit the infectious agent (refer to section of application listing infectious agents, etc), without necessarily eliciting an immune response.

- [0495] In another embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a vaccine adjuvant that enhances immune responsiveness to an antigen. In a specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an adjuvant to enhance tumor-specific immune responses.
- [0496] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an adjuvant to enhance anti-viral immune responses. Anti-viral immune responses that may be enhanced using the compositions of the invention as an adjuvant, include virus and virus associated diseases or symptoms described herein or otherwise known in the art. In specific embodiments, the compositions of the invention are used as an adjuvant to enhance an immune response to a virus, disease, or symptom selected from the group consisting of: AIDS, meningitis, Dengue, EBV, and hepatitis (e.g., hepatitis B). In another specific embodiment, the compositions of the invention are used as an adjuvant to enhance an immune response to a virus, disease, or symptom selected from the group consisting of: HIV/AIDS, respiratory syncytial virus, Dengue, rotavirus, Japanese B encephalitis, influenza A and B, parainfluenza, measles, cytomegalovirus, rabies, Junin, Chikungunya, Rift Valley Fever, herpes simplex, and yellow fever.
- [0497] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an adjuvant to enhance anti-bacterial or anti-fungal immune responses. Anti-bacterial or anti-fungal immune responses that may be enhanced using the compositions of the invention as an adjuvant, include bacteria or fungus and bacteria or fungus associated diseases or symptoms described herein or otherwise known in the art. In specific embodiments, the compositions of the invention are used as an adjuvant to enhance an immune response to a bacteria or fungus, disease, or symptom selected from the group consisting of: tetanus, Diphtheria, botulism, and meningitis type B.
- [0498] In another specific embodiment, the compositions of the invention are used as an adjuvant to enhance an immune response to a bacteria or fungus, disease, or symptom selected from the group consisting of: *Vibrio cholerae*, *Mycobacterium leprae*, *Salmonella typhi*, *Salmonella paratyphi*, *Meissneria meningitidis*, *Streptococcus pneumoniae*, Group B

streptococcus, *Shigella spp.*, Enterotoxigenic *Escherichia coli*, Enterohemorrhagic *E. coli*, and *Borrelia burgdorferi*.

[0499] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an adjuvant to enhance anti-parasitic immune responses. Anti-parasitic immune responses that may be enhanced using the compositions of the invention as an adjuvant, include parasite and parasite associated diseases or symptoms described herein or otherwise known in the art. In specific embodiments, the compositions of the invention are used as an adjuvant to enhance an immune response to a parasite. In another specific embodiment, the compositions of the invention are used as an adjuvant to enhance an immune response to *Plasmodium* (malaria) or *Leishmania*.

[0500] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention may also be employed to treat infectious diseases including silicosis, sarcoidosis, and idiopathic pulmonary fibrosis; for example, by preventing the recruitment and activation of mononuclear phagocytes.

[0501] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an antigen for the generation of antibodies to inhibit or enhance immune mediated responses against polypeptides of the invention.

[0502] In one embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are administered to an animal (e.g., mouse, rat, rabbit, hamster, guinea pig, pigs, micro-pig, chicken, camel, goat, horse, cow, sheep, dog, cat, non-human primate, and human, most preferably human) to boost the immune system to produce increased quantities of one or more antibodies (e.g., IgG, IgA, IgM, and IgE), to induce higher affinity antibody production and immunoglobulin class switching (e.g., IgG, IgA, IgM, and IgE), and/or to increase an immune response.

[0503] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a stimulator of B cell responsiveness to pathogens.

[0504] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an activator of T cells.

- [0505] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an agent that elevates the immune status of an individual prior to their receipt of immunosuppressive therapies.
- [0506] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an agent to induce higher affinity antibodies.
- [0507] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an agent to increase serum immunoglobulin concentrations.
- [0508] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an agent to accelerate recovery of immunocompromised individuals.
- [0509] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an agent to boost immunoresponsiveness among aged populations and/or neonates.
- [0510] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an immune system enhancer prior to, during, or after bone marrow transplant and/or other transplants (e.g., allogeneic or xenogeneic organ transplantation). With respect to transplantation, compositions of the invention may be administered prior to, concomitant with, and/or after transplantation. In a specific embodiment, compositions of the invention are administered after transplantation, prior to the beginning of recovery of T-cell populations. In another specific embodiment, compositions of the invention are first administered after transplantation after the beginning of recovery of T cell populations, but prior to full recovery of B cell populations.
- [0511] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an agent to boost immunoresponsiveness among individuals having an acquired loss of B cell function. Conditions resulting in an acquired loss of B cell function that may be ameliorated or treated by administering the polypeptides, antibodies, polynucleotides and/or agonists or antagonists thereof, include, but are not limited to, HIV Infection, AIDS, bone marrow transplant, and B cell chronic lymphocytic leukemia (CLL).



[0512] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an agent to boost immunoresponsiveness among individuals having a temporary immune deficiency. Conditions resulting in a temporary immune deficiency that may be ameliorated or treated by administering the polypeptides, antibodies, polynucleotides and/or agonists or antagonists thereof, include, but are not limited to, recovery from viral infections (e.g., influenza), conditions associated with malnutrition, recovery from infectious mononucleosis, or conditions associated with stress, recovery from measles, recovery from blood transfusion, and recovery from surgery.

[0513] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a regulator of antigen presentation by monocytes, dendritic cells, and/or B-cells. In one embodiment, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention enhance antigen presentation or antagonizes antigen presentation in vitro or in vivo. Moreover, in related embodiments, said enhancement or antagonism of antigen presentation may be useful as an anti-tumor treatment or to modulate the immune system.

[0514] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an agent to direct an individual's immune system towards development of a humoral response (i.e. TH2) as opposed to a TH1 cellular response.

[0515] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a means to induce tumor proliferation and thus make it more susceptible to anti-neoplastic agents. For example, multiple myeloma is a slowly dividing disease and is thus refractory to virtually all anti-neoplastic regimens. If these cells were forced to proliferate more rapidly their susceptibility profile would likely change.

[0516] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a stimulator of B cell production in pathologies such as AIDS, chronic lymphocyte disorder and/or Common Variable Immunodeficiency.

[0517] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a therapy for generation

and/or regeneration of lymphoid tissues following surgery, trauma or genetic defect. In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used in the pretreatment of bone marrow samples prior to transplant.

[0518] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a gene-based therapy for genetically inherited disorders resulting in immuno-incompetence/immunodeficiency such as observed among SCID patients.

[0519] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a means of activating monocytes/macrophages to defend against parasitic diseases that effect monocytes such as Leishmania.

[0520] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a means of regulating secreted cytokines that are elicited by polypeptides of the invention.

[0521] In another embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used in one or more of the applications deccribed herein, as they may apply to veterinary medicine.

[0522] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a means of blocking various aspects of immune responses to foreign agents or self. Examples of diseases or conditions in which blocking of certain aspects of immune responses may be desired include autoimmune disorders such as lupus, and arthritis, as well as immunoresponsiveness to skin allergies, inflammation, bowel disease, injury and diseases/disorders associated with pathogens.

[0523] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a therapy for preventing the B cell proliferation and Ig secretion associated with autoimmune diseases such as idiopathic thrombocytopenic purpura, systemic lupus erythematosus and multiple sclerosis.

[0524] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a inhibitor of B and/or T

cell migration in endothelial cells. This activity disrupts tissue architecture or cognate responses and is useful, for example in disrupting immune responses, and blocking sepsis.

[0525] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a therapy for chronic hypergammaglobulinemia evident in such diseases as monoclonal gammopathy of undetermined significance (MGUS), Waldenstrom's disease, related idiopathic monoclonal gammopathies, and plasmacytomas.

[0526] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention may be employed for instance to inhibit polypeptide chemotaxis and activation of macrophages and their precursors, and of neutrophils, basophils, B lymphocytes and some T-cell subsets, e.g., activated and CD8 cytotoxic T cells and natural killer cells, in certain autoimmune and chronic inflammatory and infective diseases. Examples of autoimmune diseases are described herein and include multiple sclerosis, and insulin-dependent diabetes.

[0527] The polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention may also be employed to treat idiopathic hyper-eosinophilic syndrome by, for example, preventing eosinophil production and migration.

[0528] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used to enhance or inhibit complement mediated cell lysis.

[0529] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used to enhance or inhibit antibody dependent cellular cytotoxicity.

[0530] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention may also be employed for treating atherosclerosis, for example, by preventing monocyte infiltration in the artery wall.

[0531] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention may be employed to treat adult respiratory distress syndrome (ARDS).

[0532] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention may be useful for stimulating wound and tissue repair, stimulating angiogenesis, and/or stimulating the repair of

vascular or lymphatic diseases or disorders. Additionally, agonists and antagonists of the invention may be used to stimulate the regeneration of mucosal surfaces.

[0533] In a specific embodiment, polynucleotides or polypeptides, and/or agonists thereof are used to diagnose, prognose, treat, and/or prevent a disorder characterized by primary or acquired immunodeficiency, deficient serum immunoglobulin production, recurrent infections, and/or immune system dysfunction. Moreover, polynucleotides or polypeptides, and/or agonists thereof may be used to treat or prevent infections of the joints, bones, skin, and/or parotid glands, blood-borne infections (e.g., sepsis, meningitis, septic arthritis, and/or osteomyelitis), autoimmune diseases (e.g., those disclosed herein), inflammatory disorders, and malignancies, and/or any disease or disorder or condition associated with these infections, diseases, disorders and/or malignancies) including, but not limited to, CVID, other primary immune deficiencies, HIV disease, CLL, recurrent bronchitis, sinusitis, otitis media, conjunctivitis, pneumonia, hepatitis, meningitis, herpes zoster (e.g., severe herpes zoster), and/or pneumocystis carinii. Other diseases and disorders that may be prevented, diagnosed, prognosed, and/or treated with polynucleotides or polypeptides, and/or agonists of the present invention include, but are not limited to, HIV infection, HTLV-BLV infection, lymphopenia, phagocyte bactericidal dysfunction anemia, thrombocytopenia, and hemoglobinuria.

[0534] In another embodiment, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention are used to treat, and/or diagnose an individual having common variable immunodeficiency disease ("CVID"; also known as "acquired agammaglobulinemia" and "acquired hypogammaglobulinemia") or a subset of this disease.

[0535] In a specific embodiment, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used to diagnose, prognose, prevent, and/or treat cancers or neoplasms including immune cell or immune tissue-related cancers or neoplasms. Examples of cancers or neoplasms that may be prevented, diagnosed, or treated by polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention include, but are not limited to, acute myelogenous leukemia, chronic myelogenous leukemia, Hodgkin's disease, non-Hodgkin's lymphoma, acute lymphocytic anemia (ALL) Chronic lymphocyte leukemia, plasmacytomas, multiple

myeloma, Burkitt's lymphoma, EBV-transformed diseases, and/or diseases and disorders described in the section entitled "Hyperproliferative Disorders" elsewhere herein.

[0536] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a therapy for decreasing cellular proliferation of Large B-cell Lymphomas.

[0537] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a means of decreasing the involvement of B cells and Ig associated with Chronic Myelogenous Leukemia.

[0538] In specific embodiments, the compositions of the invention are used as an agent to boost immunoresponsiveness among B cell immunodeficient individuals, such as, for example, an individual who has undergone a partial or complete splenectomy.

[0539] Antagonists of the invention include, for example, binding and/or inhibitory antibodies, antisense nucleic acids, ribozymes or soluble forms of the polypeptides of the present invention (e.g., Fc fusion protein; see, e.g., Example 9). Agonists of the invention include, for example, binding or stimulatory antibodies, and soluble forms of the polypeptides (e.g., Fc fusion proteins; see, e.g., Example 9). Polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention may be employed in a composition with a pharmaceutically acceptable carrier, e.g., as described herein.

[0540] In another embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are administered to an animal (including, but not limited to, those listed above, and also including transgenic animals) incapable of producing functional endogenous antibody molecules or having an otherwise compromised endogenous immune system, but which is capable of producing human immunoglobulin molecules by means of a reconstituted or partially reconstituted immune system from another animal (see, e.g., published PCT Application Nos. WO98/24893, WO/9634096, WO/9633735, and WO/9110741). Administration of polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention to such animals is useful for the generation of monoclonal antibodies against the polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention.

**Blood-Related Disorders**

[0541] The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used to modulate hemostatic (the stopping of bleeding) or thrombolytic (clot dissolving) activity. For example, by increasing hemostatic or thrombolytic activity, polynucleotides or polypeptides, and/or agonists or antagonists of the present invention could be used to treat or prevent blood coagulation diseases, disorders, and/or conditions (e.g., afibrinogenemia, factor deficiencies, hemophilia), blood platelet diseases, disorders, and/or conditions (e.g., thrombocytopenia), or wounds resulting from trauma, surgery, or other causes. Alternatively, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention that can decrease hemostatic or thrombolytic activity could be used to inhibit or dissolve clotting. These molecules could be important in the treatment or prevention of heart attacks (infarction), strokes, or scarring.

[0542] In specific embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used to prevent, diagnose, prognose, and/or treat thrombosis, arterial thrombosis, venous thrombosis, thromboembolism, pulmonary embolism, atherosclerosis, myocardial infarction, transient ischemic attack, unstable angina. In specific embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used for the prevention of occlusion of saphenous grafts, for reducing the risk of periprocedural thrombosis as might accompany angioplasty procedures, for reducing the risk of stroke in patients with atrial fibrillation including nonrheumatic atrial fibrillation, for reducing the risk of embolism associated with mechanical heart valves and or mitral valves disease. Other uses for the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention, include, but are not limited to, the prevention of occlusions in extracorporeal devices (e.g., intravascular canulas, vascular access shunts in hemodialysis patients, hemodialysis machines, and cardiopulmonary bypass machines).

[0543] In another embodiment, a polypeptide of the invention, or polynucleotides, antibodies, agonists, or antagonists corresponding to that polypeptide, may be used to prevent, diagnose, prognose, and/or treat diseases and disorders of the blood and/or blood forming organs associated with the tissue(s) in which the polypeptide of the invention is

expressed, including one, two, three, four, five, or more tissues disclosed in Table 1A, column 7 (Tissue Distribution Library Code).

**[0544]** The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used to modulate hematopoietic activity (the formation of blood cells). For example, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used to increase the quantity of all or subsets of blood cells, such as, for example, erythrocytes, lymphocytes (B or T cells), myeloid cells (e.g., basophils, eosinophils, neutrophils, mast cells, macrophages) and platelets. The ability to decrease the quantity of blood cells or subsets of blood cells may be useful in the prevention, detection, diagnosis and/or treatment of anemias and leukopenias described below. Alternatively, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used to decrease the quantity of all or subsets of blood cells, such as, for example, erythrocytes, lymphocytes (B or T cells), myeloid cells (e.g., basophils, eosinophils, neutrophils, mast cells, macrophages) and platelets.. The ability to decrease the quantity of blood cells or subsets of blood cells may be useful in the prevention, detection, diagnosis and/or treatment of leukocytoses, such as, for example eosinophilia.

**[0545]** The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used to prevent, treat, or diagnose blood dyscrasia.

**[0546]** Anemias are conditions in which the number of red blood cells or amount of hemoglobin (the protein that carries oxygen) in them is below normal. Anemia may be caused by excessive bleeding, decreased red blood cell production, or increased red blood cell destruction (hemolysis). The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, and/or diagnosing anemias. Anemias that may be treated prevented or diagnosed by the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention include iron deficiency anemia, hypochromic anemia, microcytic anemia, chlorosis, hereditary sideroblastic anemia, idiopathic acquired sideroblastic anemia, red cell aplasia, megaloblastic anemia (e.g., pernicious anemia, (vitamin B12 deficiency) and folic acid deficiency anemia), aplastic anemia, hemolytic anemias (e.g., autoimmune hemolytic anemia, microangiopathic hemolytic anemia, and paroxysmal nocturnal hemoglobinuria). The polynucleotides, polypeptides, antibodies, and/or agonists or

antagonists of the present invention may be useful in treating, preventing, and/or diagnosing anemias associated with diseases including but not limited to, anemias associated with systemic lupus erythematosus, cancers, lymphomas, chronic renal disease, and enlarged spleens. The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, and/or diagnosing anemias arising from drug treatments such as anemias associated with methylidopa, dapsone, and/or sulfadriugs. Additionally, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, and/or diagnosing anemias associated with abnormal red blood cell architecture including but not limited to, hereditary spherocytosis, hereditary elliptocytosis, glucose-6-phosphate dehydrogenase deficiency, and sickle cell anemia.

**[0547]** The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, and/or diagnosing hemoglobin abnormalities, (e.g., those associated with sickle cell anemia, hemoglobin C disease, hemoglobin S-C disease, and hemoglobin E disease). Additionally, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating thalassemias, including, but not limited to major and minor forms of alpha-thalassemia and beta-thalassemia.

**[0548]** In another embodiment, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating bleeding disorders including, but not limited to, thrombocytopenia (e.g., idiopathic thrombocytopenic purpura, and thrombotic thrombocytopenic purpura), Von Willebrand's disease, hereditary platelet disorders (e.g., storage pool disease such as Chediak-Higashi and Hermansky-Pudlak syndromes, thromboxane A<sub>2</sub> dysfunction, thromboasthenia, and Bernard-Soulier syndrome), hemolytic-uremic syndrome, hemophelias such as hemophilia A or Factor VII deficiency and Christmas disease or Factor IX deficiency, Hereditary Hemorrhagic Telangiectasia, also known as Rendu-Osler-Weber syndrome, allergic purpura (Henoch Schonlein purpura) and disseminated intravascular coagulation.

**[0549]** The effect of the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention on the clotting time of blood may be monitored using any of the clotting tests known in the art including, but not limited to, whole blood partial



thromboplastin time (PTT), the activated partial thromboplastin time (aPTT), the activated clotting time (ACT), the recalcified activated clotting time, or the Lee-White Clotting time.

[0550] Several diseases and a variety of drugs can cause platelet dysfunction. Thus, in a specific embodiment, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating acquired platelet dysfunction such as platelet dysfunction accompanying kidney failure, leukemia, multiple myeloma, cirrhosis of the liver, and systemic lupus erythematosus as well as platelet dysfunction associated with drug treatments, including treatment with aspirin, ticlopidine, nonsteroidal anti-inflammatory drugs (used for arthritis, pain, and sprains), and penicillin in high doses.

[0551] In another embodiment, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating diseases and disorders characterized by or associated with increased or decreased numbers of white blood cells. Leukopenia occurs when the number of white blood cells decreases below normal. Leukopenias include, but are not limited to, neutropenia and lymphocytopenia. An increase in the number of white blood cells compared to normal is known as leukocytosis. The body generates increased numbers of white blood cells during infection. Thus, leukocytosis may simply be a normal physiological parameter that reflects infection. Alternatively, leukocytosis may be an indicator of injury or other disease such as cancer. Leukocytoses, include but are not limited to, eosinophilia, and accumulations of macrophages. In specific embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating leukopenia. In other specific embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating leukocytosis.

[0552] Leukopenia may be a generalized decreased in all types of white blood cells, or may be a specific depletion of particular types of white blood cells. Thus, in specific embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating decreases in neutrophil numbers, known as neutropenia. Neutropenias that may

be diagnosed, prognosed, prevented, and/or treated by the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention include, but are not limited to, infantile genetic agranulocytosis, familial neutropenia, cyclic neutropenia, neutropenias resulting from or associated with dietary deficiencies (e.g., vitamin B 12 deficiency or folic acid deficiency), neutropenias resulting from or associated with drug treatments (e.g., antibiotic regimens such as penicillin treatment, sulfonamide treatment, anticoagulant treatment, anticonvulsant drugs, anti-thyroid drugs, and cancer chemotherapy), and neutropenias resulting from increased neutrophil destruction that may occur in association with some bacterial or viral infections, allergic disorders, autoimmune diseases, conditions in which an individual has an enlarged spleen (e.g., Felty syndrome, malaria and sarcoidosis), and some drug treatment regimens.

[0553] The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating lymphocytopenias (decreased numbers of B and/or T lymphocytes), including, but not limited lymphocytopenias resulting from or associated with stress, drug treatments (e.g., drug treatment with corticosteroids, cancer chemotherapies, and/or radiation therapies), AIDS infection and/or other diseases such as, for example, cancer, rheumatoid arthritis, systemic lupus erythematosus, chronic infections, some viral infections and/or hereditary disorders (e.g., DiGeorge syndrome, Wiskott-Aldrich Syndrome, severe combined immunodeficiency, ataxia telangiectasia).

[0554] The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating diseases and disorders associated with macrophage numbers and/or macrophage function including, but not limited to, Gaucher's disease, Niemann-Pick disease, Letterer-Siwe disease and Hand-Schuller-Christian disease.

[0555] In another embodiment, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating diseases and disorders associated with eosinophil numbers and/or eosinophil function including, but not limited to, idiopathic hypereosinophilic syndrome, eosinophilia-myalgia syndrome, and Hand-Schuller-Christian disease.

[0556] In yet another embodiment, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing,

prognosing, preventing, and/or treating leukemias and lymphomas including, but not limited to, acute lymphocytic (lymphoblastic) leukemia (ALL), acute myeloid (myelocytic, myelogenous, myeloblastic, or myelomonocytic) leukemia, chronic lymphocytic leukemia (e.g., B cell leukemias, T cell leukemias, Sezary syndrome, and Hairy cell leukemia), chronic myelocytic (myeloid, myelogenous, or granulocytic) leukemia, Hodgkin's lymphoma, non-hodgkin's lymphoma, Burkitt's lymphoma, and mycosis fungoides.

[0557] In other embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating diseases and disorders of plasma cells including, but not limited to, plasma cell dyscrasias, monoclonal gammaopathies, monoclonal gammopathies of undetermined significance, multiple myeloma, macroglobulinemia, Waldenstrom's macroglobulinemia, cryoglobulinemia, and Raynaud's phenomenon.

[0558] In other embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, and/or diagnosing myeloproliferative disorders, including but not limited to, polycythemia vera, relative polycythemia, secondary polycythemia, myelofibrosis, acute myelofibrosis, agnogenic myelod metaplasia, thrombocythemia, (including both primary and secondary thrombocythemia) and chronic myelocytic leukemia.

[0559] In other embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful as a treatment prior to surgery, to increase blood cell production.

[0560] In other embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful as an agent to enhance the migration, phagocytosis, superoxide production, antibody dependent cellular cytotoxicity of neutrophils, eosinophils and macrophages.

[0561] In other embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful as an agent to increase the number of stem cells in circulation prior to stem cells pheresis. In another specific embodiment, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful as an agent to increase the number of stem cells in circulation prior to platelet pheresis.

[0562] In other embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful as an agent to increase cytokine production.

[0563] In other embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in preventing, diagnosing, and/or treating primary hematopoietic disorders.

### **Hyperproliferative Disorders**

[0564] Hematopoietic and immune system associated polynucleotides or polypeptides, or agonists or antagonists thereof, can be used to treat, prevent, diagnose and/or prognose hyperproliferative diseases, disorders, and/or conditions, including neoplasms.

[0565] In a specific embodiment, hematopoietic and immune system associated polynucleotides or polypeptides, or agonists or antagonists thereof, can be used to treat, prevent, and/or diagnose hyperproliferative diseases, disorders, and/or conditions of the hematopoietic and immune system.

[0566] In a preferred embodiment, hematopoietic and immune system associated polynucleotides or polypeptides, or agonists or antagonists thereof, can be used to treat, prevent, and/or diagnose hematopoietic and immune system neoplasms.

[0567] Hematopoietic and immune system associated polynucleotides or polypeptides, or agonists or antagonists of the invention, may inhibit the proliferation of the disorder through direct or indirect interactions. Alternatively, hematopoietic and immune system associated polynucleotides or polypeptides, or agonists or antagonists thereof, may proliferate other cells, which can inhibit the hyperproliferative disorder.

[0568] For example, by increasing an immune response, particularly increasing antigenic qualities of the hyperproliferative disorder or by proliferating, differentiating, or mobilizing T-cells, hyperproliferative diseases, disorders, and/or conditions can be treated, prevented, and/or diagnosed. This immune response may be increased by either enhancing an existing immune response, or by initiating a new immune response. Alternatively, decreasing an immune response may also be a method of treating, preventing, and/or diagnosing hyperproliferative diseases, disorders, and/or conditions, such as a chemotherapeutic agent.

[0569] Examples of hyperproliferative diseases, disorders, and/or conditions that can be treated, prevented, and/or diagnosed by hematopoietic and immune system associated polynucleotides or polypeptides, or agonists or antagonists thereof, include, but are not limited to neoplasms located in the: prostate, colon, abdomen, bone, breast, digestive system, liver, pancreas, peritoneum, endocrine glands (adrenal, parathyroid, pituitary, testicles, ovary, thymus, thyroid), eye, head and neck, nervous (central and peripheral), lymphatic system, pelvic, skin, soft tissue, spleen, thoracic, and urogenital.

[0570] Similarly, other hyperproliferative disorders can also be treated or detected by polynucleotides or polypeptides, or agonists or antagonists of the present invention. Examples of such hyperproliferative disorders include, but are not limited to: Acute Childhood Lymphoblastic Leukemia, Acute Lymphoblastic Leukemia, Acute Lymphocytic Leukemia, Acute Myeloid Leukemia, Adrenocortical Carcinoma, Adult (Primary) Hepatocellular Cancer, Adult (Primary) Liver Cancer, Adult Acute Lymphocytic Leukemia, Adult Acute Myeloid Leukemia, Adult Hodgkin's Disease, Adult Hodgkin's Lymphoma, Adult Lymphocytic Leukemia, Adult Non-Hodgkin's Lymphoma, Adult Primary Liver Cancer, Adult Soft Tissue Sarcoma, AIDS-Related Lymphoma, AIDS-Related Malignancies, Anal Cancer, Astrocytoma, Bile Duct Cancer, Bladder Cancer, Bone Cancer, Brain Stem Glioma, Brain Tumors, Breast Cancer, Cancer of the Renal Pelvis and Ureter, Central Nervous System (Primary) Lymphoma, Central Nervous System Lymphoma, Cerebellar Astrocytoma, Cerebral Astrocytoma, Cervical Cancer, Childhood (Primary) Hepatocellular Cancer, Childhood (Primary) Liver Cancer, Childhood Acute Lymphoblastic Leukemia, Childhood Acute Myeloid Leukemia, Childhood Brain Stem Glioma, Childhood Cerebellar Astrocytoma, Childhood Cerebral Astrocytoma, Childhood Extracranial Germ Cell Tumors, Childhood Hodgkin's Disease, Childhood Hodgkin's Lymphoma, Childhood Hypothalamic and Visual Pathway Glioma, Childhood Lymphoblastic Leukemia, Childhood Medulloblastoma, Childhood Non-Hodgkin's Lymphoma, Childhood Pineal and Supratentorial Primitive Neuroectodermal Tumors, Childhood Primary Liver Cancer, Childhood Rhabdomyosarcoma, Childhood Soft Tissue Sarcoma, Childhood Visual Pathway and Hypothalamic Glioma, Chronic Lymphocytic Leukemia, Chronic Myelogenous Leukemia, Colon Cancer, Cutaneous T-Cell Lymphoma, Endocrine Pancreas Islet Cell Carcinoma, Endometrial Cancer, Ependymoma, Epithelial Cancer, Esophageal Cancer, Ewing's Sarcoma and Related

Tumors, Exocrine Pancreatic Cancer, Extracranial Germ Cell Tumor, Extragonadal Germ Cell Tumor, Extrahepatic Bile Duct Cancer, Eye Cancer, Female Breast Cancer, Gaucher's Disease, Gallbladder Cancer, Gastric Cancer, Gastrointestinal Carcinoid Tumor, Gastrointestinal Tumors, Germ Cell Tumors, Gestational Trophoblastic Tumor, Hairy Cell Leukemia, Head and Neck Cancer, Hepatocellular Cancer, Hodgkin's Disease, Hodgkin's Lymphoma, Hypergammaglobulinemia, Hypopharyngeal Cancer, Intestinal Cancers, Intraocular Melanoma, Islet Cell Carcinoma, Islet Cell Pancreatic Cancer, Kaposi's Sarcoma, Kidney Cancer, Laryngeal Cancer, Lip and Oral Cavity Cancer, Liver Cancer, Lung Cancer, Lymphoproliferative Disorders, Macroglobulinemia, Male Breast Cancer, Malignant Mesothelioma, Malignant Thymoma, Medulloblastoma, Melanoma, Mesothelioma, Metastatic Occult Primary Squamous Neck Cancer, Metastatic Primary Squamous Neck Cancer, Metastatic Squamous Neck Cancer, Multiple Myeloma, Multiple Myeloma/Plasma Cell Neoplasm, Myelodysplastic Syndrome, Myelogenous Leukemia, Myeloid Leukemia, Myeloproliferative Disorders, Nasal Cavity and Paranasal Sinus Cancer, Nasopharyngeal Cancer, Neuroblastoma, Non-Hodgkin's Lymphoma During Pregnancy, Nonmelanoma Skin Cancer, Non-Small Cell Lung Cancer, Occult Primary Metastatic Squamous Neck Cancer, Oropharyngeal Cancer, Osteo-/Malignant Fibrous Sarcoma, Osteosarcoma/Malignant Fibrous Histiocytoma, Osteosarcoma/Malignant Fibrous Histiocytoma of Bone, Ovarian Epithelial Cancer, Ovarian Germ Cell Tumor, Ovarian Low Malignant Potential Tumor, Pancreatic Cancer, Paraproteinemia, Purpura, Parathyroid Cancer, Penile Cancer, Pheochromocytoma, Pituitary Tumor, Plasma Cell Neoplasm/Multiple Myeloma, Primary Central Nervous System Lymphoma, Primary Liver Cancer, Prostate Cancer, Rectal Cancer, Renal Cell Cancer, Renal Pelvis and Ureter Cancer, Retinoblastoma, Rhabdomyosarcoma, Salivary Gland Cancer, Sarcoidosis Sarcomas, Sezary Syndrome, Skin Cancer, Small Cell Lung Cancer, Small Intestine Cancer, Soft Tissue Sarcoma, Squamous Neck Cancer, Stomach Cancer, Supratentorial Primitive Neuroectodermal and Pineal Tumors, T-Cell Lymphoma, Testicular Cancer, Thymoma, Thyroid Cancer, Transitional Cell Cancer of the Renal Pelvis and Ureter, Transitional Renal Pelvis and Ureter Cancer, Trophoblastic Tumors, Ureter and Renal Pelvis Cell Cancer, Urethral Cancer, Uterine Cancer, Uterine Sarcoma, Vaginal Cancer, Visual Pathway and Hypothalamic Glioma, Vulvar Cancer, Waldenstrom's

Macroglobulinemia, Wilms' Tumor, and any other hyperproliferative disease, besides neoplasia, located in an organ system listed above.

[0571] In another preferred embodiment, polynucleotides or polypeptides, or agonists or antagonists of the present invention are used to diagnose, prognose, prevent, and/or treat premalignant conditions and to prevent progression to a neoplastic or malignant state, including but not limited to those disorders described above. Such uses are indicated in conditions known or suspected of preceding progression to neoplasia or cancer, in particular, where non-neoplastic cell growth consisting of hyperplasia, metaplasia, or most particularly, dysplasia has occurred (for review of such abnormal growth conditions, see Robbins and Angell, 1976, Basic Pathology, 2d Ed., W. B. Saunders Co., Philadelphia, pp. 68-79.)

[0572] Hyperplasia is a form of controlled cell proliferation, involving an increase in cell number in a tissue or organ, without significant alteration in structure or function. Hyperplastic disorders which can be diagnosed, prognosed, prevented, and/or treated with compositions of the invention (including polynucleotides, polypeptides, agonists or antagonists) include, but are not limited to, angiofollicular mediastinal lymph node hyperplasia, angiolymphoid hyperplasia with eosinophilia, atypical melanocytic hyperplasia, basal cell hyperplasia, benign giant lymph node hyperplasia, cementum hyperplasia, congenital adrenal hyperplasia, congenital sebaceous hyperplasia, cystic hyperplasia, cystic hyperplasia of the breast, denture hyperplasia, ductal hyperplasia, endometrial hyperplasia, fibromuscular hyperplasia, focal epithelial hyperplasia, gingival hyperplasia, inflammatory fibrous hyperplasia, inflammatory papillary hyperplasia, intravascular papillary endothelial hyperplasia, nodular hyperplasia of prostate, nodular regenerative hyperplasia, pseudoepitheliomatous hyperplasia, senile sebaceous hyperplasia, and verrucous hyperplasia.

[0573] Metaplasia is a form of controlled cell growth in which one type of adult or fully differentiated cell substitutes for another type of adult cell. Metaplastic disorders which can be diagnosed, prognosed, prevented, and/or treated with compositions of the invention (including polynucleotides, polypeptides, agonists or antagonists) include, but are not limited to, agnogenic myeloid metaplasia, apocrine metaplasia, atypical metaplasia, autoparenchymatous metaplasia, connective tissue metaplasia, epithelial metaplasia, intestinal metaplasia, metaplastic anemia, metaplastic ossification, metaplastic

polyps, myeloid metaplasia, primary myeloid metaplasia, secondary myeloid metaplasia, squamous metaplasia, squamous metaplasia of amnion, and symptomatic myeloid metaplasia.

[0574] Dysplasia is frequently a forerunner of cancer, and is found mainly in the epithelia; it is the most disorderly form of non-neoplastic cell growth, involving a loss in individual cell uniformity and in the architectural orientation of cells. Dysplastic cells often have abnormally large, deeply stained nuclei, and exhibit pleomorphism. Dysplasia characteristically occurs where there exists chronic irritation or inflammation. Dysplastic disorders which can be diagnosed, prognosed, prevented, and/or treated with compositions of the invention (including polynucleotides, polypeptides, agonists or antagonists) include, but are not limited to, anhidrotic ectodermal dysplasia, anterofacial dysplasia, asphyxiating thoracic dysplasia, atriadigital dysplasia, bronchopulmonary dysplasia, cerebral dysplasia, cervical dysplasia, chondroectodermal dysplasia, cleidocranial dysplasia, congenital ectodermal dysplasia, craniodiaphysial dysplasia, craniocarpotarsal dysplasia, craniometaphysial dysplasia, dentin dysplasia, diaphysial dysplasia, ectodermal dysplasia, enamel dysplasia, encephalo-ophthalmic dysplasia, dysplasia epiphysialis hemimelia, dysplasia epiphysialis multiplex, dysplasia epiphysialis punctata, epithelial dysplasia, faciodigitogenital dysplasia, familial fibrous dysplasia of jaws, familial white folded dysplasia, fibromuscular dysplasia, fibrous dysplasia of bone, florid osseous dysplasia, hereditary renal-retinal dysplasia, hidrotic ectodermal dysplasia, hypohidrotic ectodermal dysplasia, lymphopenic thymic dysplasia, mammary dysplasia, mandibulofacial dysplasia, metaphysial dysplasia, Mondini dysplasia, monostotic fibrous dysplasia, mucoepithelial dysplasia, multiple epiphysial dysplasia, oculoauriculovertebral dysplasia, oculodentodigital dysplasia, oculovertbral dysplasia, odontogenic dysplasia, ophthalmomandibulomelic dysplasia, periapical cemental dysplasia, polyostotic fibrous dysplasia, pseudoachondroplastic spondyloepiphysial dysplasia, retinal dysplasia, septo-optic dysplasia, spondyloepiphysial dysplasia, and ventriculoradial dysplasia.

[0575] Additional pre-neoplastic disorders which can be diagnosed, prognosed, prevented, and/or treated with compositions of the invention (including polynucleotides, polypeptides, agonists or antagonists) include, but are not limited to, benign dysproliferative disorders (e.g., benign tumors, fibrocystic conditions, tissue hypertrophy,



intestinal polyps, colon polyps, and esophageal dysplasia), leukoplakia, keratoses, Bowen's disease, Farmer's Skin, solar cheilitis, and solar keratosis.

[0576] In another embodiment, a polypeptide of the invention, or polynucleotides, antibodies, agonists, or antagonists corresponding to that polypeptide, may be used to diagnose and/or prognose disorders associated with the tissue(s) in which the polypeptide of the invention is expressed, including one, two, three, four, five, or more tissues disclosed in Table 1A, 7 (Tissue Distribution Library Code).

[0577] In another embodiment, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention conjugated to a toxin or a radioactive isotope, as described herein, may be used to treat cancers and neoplasms, including, but not limited to those described herein. In a further preferred embodiment, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention conjugated to a toxin or a radioactive isotope, as described herein, may be used to treat acute myelogenous leukemia.

[0578] Additionally, polynucleotides, polypeptides, and/or agonists or antagonists of the invention may affect apoptosis, and therefore, would be useful in treating a number of diseases associated with increased cell survival or the inhibition of apoptosis. For example, diseases associated with increased cell survival or the inhibition of apoptosis that could be diagnosed, prognosed, prevented, and/or treated by polynucleotides, polypeptides, and/or agonists or antagonists of the invention, include cancers (such as follicular lymphomas, carcinomas with p53 mutations, and hormone-dependent tumors, including, but not limited to colon cancer, cardiac tumors, pancreatic cancer, melanoma, retinoblastoma, glioblastoma, lung cancer, intestinal cancer, testicular cancer, stomach cancer, neuroblastoma, myxoma, myoma, lymphoma, endothelioma, osteoblastoma, osteoclastoma, osteosarcoma, chondrosarcoma, adenoma, breast cancer, prostate cancer, Kaposi's sarcoma and ovarian cancer); autoimmune disorders such as, multiple sclerosis, Sjogren's syndrome, Hashimoto's thyroiditis, biliary cirrhosis, Behcet's disease, Crohn's disease, polymyositis, systemic lupus erythematosus and immune-related glomerulonephritis and rheumatoid arthritis) and viral infections (such as herpes viruses, pox viruses and adenoviruses), inflammation, graft v. host disease, acute graft rejection, and chronic graft rejection.

[0579] In preferred embodiments, polynucleotides, polypeptides, and/or agonists or antagonists of the invention are used to inhibit growth, progression, and/or metastasis of cancers, in particular those listed above.

[0580] Additional diseases or conditions associated with increased cell survival that could be diagnosed, prognosed, prevented, and/or treated by polynucleotides, polypeptides, and/or agonists or antagonists of the invention, include, but are not limited to, progression, and/or metastases of malignancies and related disorders such as leukemia (including acute leukemias (e.g., acute lymphocytic leukemia, acute myelocytic leukemia (including myeloblastic, promyelocytic, myelomonocytic, monocytic, and erythroleukemia)) and chronic leukemias (e.g., chronic myelocytic (granulocytic) leukemia and chronic lymphocytic leukemia)), polycythemia vera, lymphomas (e.g., Hodgkin's disease and non-Hodgkin's disease), multiple myeloma, Waldenstrom's macroglobulinemia, heavy chain disease, and solid tumors including, but not limited to, sarcomas and carcinomas such as fibrosarcoma, myxosarcoma, liposarcoma, chondrosarcoma, osteogenic sarcoma, chordoma, angiosarcoma, endotheliosarcoma, lymphangiosarcoma, lymphangioendotheliosarcoma, synovioma, mesothelioma, Ewing's tumor, leiomyosarcoma, rhabdomyosarcoma, colon carcinoma, pancreatic cancer, breast cancer, ovarian cancer, prostate cancer, squamous cell carcinoma, basal cell carcinoma, adenocarcinoma, sweat gland carcinoma, sebaceous gland carcinoma, papillary carcinoma, papillary adenocarcinomas, cystadenocarcinoma, medullary carcinoma, bronchogenic carcinoma, renal cell carcinoma, hepatoma, bile duct carcinoma, choriocarcinoma, seminoma, embryonal carcinoma, Wilm's tumor, cervical cancer, testicular tumor, lung carcinoma, small cell lung carcinoma, bladder carcinoma, epithelial carcinoma, glioma, astrocytoma, medulloblastoma, craniopharyngioma, ependymoma, pinealoma, emangioblastoma, acoustic neuroma, oligodendroglioma, menangioma, melanoma, neuroblastoma, and retinoblastoma.

[0581] Diseases associated with increased apoptosis that could be diagnosed, prognosed, prevented, and/or treated by polynucleotides, polypeptides, and/or agonists or antagonists of the invention, include AIDS; neurodegenerative disorders (such as Alzheimer's disease, Parkinson's disease, amyotrophic lateral sclerosis, retinitis pigmentosa, cerebellar degeneration and brain tumor or prior associated disease); autoimmune disorders (such as, multiple sclerosis, Sjogren's syndrome, Hashimoto's

thyroiditis, biliary cirrhosis, Behcet's disease, Crohn's disease, polymyositis, systemic lupus erythematosus and immune-related glomerulonephritis and rheumatoid arthritis) myelodysplastic syndromes (such as aplastic anemia), graft v. host disease, ischemic injury (such as that caused by myocardial infarction, stroke and reperfusion injury), liver injury (e.g., hepatitis related liver injury, ischemia/reperfusion injury, cholestosis (bile duct injury) and liver cancer); toxin-induced liver disease (such as that caused by alcohol), septic shock, cachexia and anorexia.

**[0582]** Hyperproliferative diseases and/or disorders that could be diagnosed, prognosed, prevented, and/or treated by polynucleotides, polypeptides, and/or agonists or antagonists of the invention, include, but are not limited to, neoplasms located in the liver, abdomen, bone, breast, digestive system, pancreas, peritoneum, endocrine glands (adrenal, parathyroid, pituitary, testicles, ovary, thymus, thyroid), eye, head and neck, nervous system (central and peripheral), lymphatic system, pelvis, skin, soft tissue, spleen, thorax, and urogenital tract.

**[0583]** Similarly, other hyperproliferative disorders can also be diagnosed, prognosed, prevented, and/or treated by polynucleotides, polypeptides, and/or agonists or antagonists of the invention. Examples of such hyperproliferative disorders include, but are not limited to: hypergammaglobulinemia, lymphoproliferative disorders, paraproteinemias, purpura, sarcoidosis, Sezary Syndrome, Waldenström's macroglobulinemia, Gaucher's Disease, histiocytosis, and any other hyperproliferative disease, besides neoplasia, located in an organ system listed above.

**[0584]** One preferred embodiment utilizes polynucleotides of the present invention to inhibit aberrant cellular division, by gene therapy using the present invention, and/or protein fusions or fragments thereof.

**[0585]** Thus, the present invention provides a method for treating cell proliferative diseases, disorders, and/or conditions by inserting into an abnormally proliferating cell a polynucleotide of the present invention, wherein said polynucleotide represses said cell proliferation, disease, disorder, and/or condition.

**[0586]** In a preferred embodiment, the present invention provides a method for treating cell proliferative diseases, disorders and/or conditions of the hematopoietic and immune system by inserting into a cell, a polynucleotide of the present invention, wherein said polynucleotide represses said cell proliferation, disease and/or disorder.

[0587] Another embodiment of the present invention provides a method of treating cell-proliferative diseases, disorders, and/or conditions in individuals comprising administration of one or more active gene copies of the present invention to an abnormally proliferating cell or cells. In a preferred embodiment, polynucleotides of the present invention is a DNA construct comprising a recombinant expression vector effective in expressing a DNA sequence encoding said polynucleotides. In another preferred embodiment of the present invention, the DNA construct encoding the polynucleotides of the present invention is inserted into cells to be treated utilizing a retrovirus, or more preferably an adenoviral vector (see, e.g., G J. Nabel, et. al., PNAS 96: 324-326 (1999), which is hereby incorporated by reference). In a most preferred embodiment, the viral vector is defective and will not transform non-proliferating cells, only proliferating cells. Moreover, in a preferred embodiment, the polynucleotides of the present invention inserted into proliferating cells either alone, or in combination with or fused to other polynucleotides, can then be modulated via an external stimulus (i.e., magnetic, specific small molecule, chemical, or drug administration, etc.), which acts upon the promoter upstream of said polynucleotides to induce expression of the encoded protein product. As such the beneficial therapeutic affect of the present invention may be expressly modulated (i.e., to increase, decrease, or inhibit expression of the present invention) based upon said external stimulus.

[0588] Polynucleotides of the present invention may be useful in repressing expression of oncogenic genes or antigens. By "repressing expression of the oncogenic genes " is intended the suppression of the transcription of the gene, the degradation of the gene transcript (pre-message RNA), the inhibition of splicing, the destruction of the messenger RNA, the prevention of the post-translational modifications of the protein, the destruction of the protein, or the inhibition of the normal function of the protein.

[0589] For local administration to abnormally proliferating cells, polynucleotides of the present invention may be administered by any method known to those of skill in the art including, but not limited to transfection, electroporation, microinjection of cells, or in vehicles such as liposomes, lipofectin, or as naked polynucleotides, or any other method described throughout the specification. The polynucleotide of the present invention may be delivered by known gene delivery systems such as, but not limited to, retroviral vectors (Gilboa, J. Virology 44:845 (1982); Hocke, Nature 320:275 (1986); Wilson, et al., Proc.

Natl. Acad. Sci. U.S.A. 85:3014), vaccinia virus system (Chakrabarty et al., Mol. Cell Biol. 5:3403 (1985) or other efficient DNA delivery systems (Yates et al., Nature 313:812 (1985)) known to those skilled in the art. These references are exemplary only and are hereby incorporated by reference. In order to specifically deliver or transfect cells which are abnormally proliferating and spare non-dividing cells, it is preferable to utilize a retrovirus, or adenoviral (as described in the art and elsewhere herein) delivery system known to those of skill in the art. Since host DNA replication is required for retroviral DNA to integrate and the retrovirus will be unable to self replicate due to the lack of the retrovirus genes needed for its life cycle. Utilizing such a retroviral delivery system for polynucleotides of the present invention will target said gene and constructs to abnormally proliferating cells and will spare the non-dividing normal cells.

[0590] The polynucleotides of the present invention may be delivered directly to cell proliferative disorder/disease sites in internal organs, body cavities and the like by use of imaging devices used to guide an injecting needle directly to the disease site. The polynucleotides of the present invention may also be administered to disease sites at the time of surgical intervention.

[0591] By "cell proliferative disease" is meant any human or animal disease or disorder, affecting any one or any combination of organs, cavities, or body parts, which is characterized by single or multiple local abnormal proliferations of cells, groups of cells, or tissues, whether benign or malignant.

[0592] Any amount of the polynucleotides of the present invention may be administered as long as it has a biologically inhibiting effect on the proliferation of the treated cells. Moreover, it is possible to administer more than one of the polynucleotide of the present invention simultaneously to the same site. By "biologically inhibiting" is meant partial or total growth inhibition as well as decreases in the rate of proliferation or growth of the cells. The biologically inhibitory dose may be determined by assessing the effects of the polynucleotides of the present invention on target malignant or abnormally proliferating cell growth in tissue culture, tumor growth in animals and cell cultures, or any other method known to one of ordinary skill in the art.

[0593] The present invention is further directed to antibody-based therapies which involve administering of anti-polypeptides and anti-polynucleotide antibodies to a mammalian, preferably human, patient for treating one or more of the described diseases,

disorders, and/or conditions. Methods for producing anti-polypeptides and anti-polynucleotide antibodies polyclonal and monoclonal antibodies are described in detail elsewhere herein. Such antibodies may be provided in pharmaceutically acceptable compositions as known in the art or as described herein.

[0594] A summary of the ways in which the antibodies of the present invention may be used therapeutically includes binding polynucleotides or polypeptides of the present invention locally or systemically in the body or by direct cytotoxicity of the antibody, e.g., as mediated by complement (CDC) or by effector cells (ADCC). Some of these approaches are described in more detail below. Armed with the teachings provided herein, one of ordinary skill in the art will know how to use the antibodies of the present invention for diagnostic, monitoring or therapeutic purposes without undue experimentation.

[0595] In particular, the antibodies, fragments and derivatives of the present invention are useful for treating a subject having or developing cell proliferative and/or differentiation diseases, disorders, and/or conditions as described herein. Such treatment comprises administering a single or multiple doses of the antibody, or a fragment, derivative, or a conjugate thereof.

[0596] The antibodies of this invention may be advantageously utilized in combination with other monoclonal or chimeric antibodies, or with lymphokines or hematopoietic growth factors, for example, which serve to increase the number or activity of effector cells which interact with the antibodies.

[0597] It is preferred to use high affinity and/or potent *in vivo* inhibiting and/or neutralizing antibodies against polypeptides or polynucleotides of the present invention, fragments or regions thereof, for both immunoassays directed to and therapy of diseases, disorders, and/or conditions related to polynucleotides or polypeptides, including fragments thereof, of the present invention. Such antibodies, fragments, or regions, will preferably have an affinity for polynucleotides or polypeptides, including fragments thereof. Preferred binding affinities include those with a dissociation constant or  $K_d$  less than  $5 \times 10^{-6}M$ ,  $10^{-6}M$ ,  $5 \times 10^{-7}M$ ,  $10^{-7}M$ ,  $5 \times 10^{-8}M$ ,  $10^{-8}M$ ,  $5 \times 10^{-9}M$ ,  $10^{-9}M$ ,  $5 \times 10^{-10}M$ ,  $10^{-10}M$ ,  $5 \times 10^{-11}M$ ,  $10^{-11}M$ ,  $5 \times 10^{-12}M$ ,  $10^{-12}M$ ,  $5 \times 10^{-13}M$ ,  $10^{-13}M$ ,  $5 \times 10^{-14}M$ ,  $10^{-14}M$ ,  $5 \times 10^{-15}M$ , and  $10^{-15}M$ .

[0598] Moreover, hematopoietic and immune system antigen polypeptides of the present invention or fragments thereof, are useful in inhibiting the angiogenesis of proliferative cells or tissues, either alone, as a protein fusion, or in combination with other polypeptides directly or indirectly, as described elsewhere herein. In a most preferred embodiment, said anti-angiogenesis effect may be achieved indirectly, for example, through the inhibition of hematopoietic, tumor-specific cells, such as tumor-associated macrophages (see, e.g., Joseph IB, et al. *J Natl Cancer Inst*, 90(21):1648-53 (1998), which is hereby incorporated by reference). Antibodies directed to polypeptides or polynucleotides of the present invention may also result in inhibition of angiogenesis directly, or indirectly (see, e.g., Witte L, et al., *Cancer Metastasis Rev.* 17(2):155-61 (1998), which is hereby incorporated by reference)).

[0599] Polypeptides, including protein fusions, of the present invention, or fragments thereof may be useful in inhibiting proliferative cells or tissues through the induction of apoptosis. Said polypeptides may act either directly, or indirectly to induce apoptosis of proliferative cells and tissues, for example in the activation of a death-domain receptor, such as tumor necrosis factor (TNF) receptor-1, CD95 (Fas/APO-1), TNF-receptor-related apoptosis-mediated protein (TRAMP) and TNF-related apoptosis-inducing ligand (TRAIL) receptor-1 and -2 (see, e.g., Schulze-Osthoff K, et.al., *Eur J Biochem* 254(3):439-59 (1998), which is hereby incorporated by reference). Moreover, in another preferred embodiment of the present invention, said polypeptides may induce apoptosis through other mechanisms, such as in the activation of other proteins which will activate apoptosis, or through stimulating the expression of said proteins, either alone or in combination with small molecule drugs or adjuvants, such as apoptonin, galectins, thioredoxins, antiinflammatory proteins (See for example, *Mutat. Res.* 400(1-2):447-55 (1998), *Med Hypotheses*.50(5):423-33 (1998), *Chem. Biol. Interact.* Apr 24;111-112:23-34 (1998), *J. Mo. Med.* 76(6):402-12 (1998), *Int. J. Tissue React.* 20(1):3-15 (1998), which are all hereby incorporated by reference).

[0600] Polypeptides, including protein fusions to, or fragments thereof, of the present invention are useful in inhibiting the metastasis of proliferative cells or tissues. Inhibition may occur as a direct result of administering polypeptides, or antibodies directed to said polypeptides as described elsewhere herein, or indirectly, such as activating the expression of proteins known to inhibit metastasis, for example alpha 4 integrins, (See, e.g., *Curr Top*

Microbiol Immunol 1998;231:125-41, which is hereby incorporated by reference). Such therapeutic affects of the present invention may be achieved either alone, or in combination with small molecule drugs or adjuvants.

[0601] In another embodiment, the invention provides a method of delivering compositions containing the polypeptides of the invention (e.g., compositions containing polypeptides or anti-hematopoietic and immune system antigen polypeptide antibodies associated with heterologous polypeptides, heterologous nucleic acids, toxins, or prodrugs) to targeted cells expressing the polypeptide of the present invention. hematopoietic and immune system antigen polypeptides or anti-hematopoietic and immune system antigen polypeptide antibodies of the invention may be associated with heterologous polypeptides, heterologous nucleic acids, toxins, or prodrugs via hydrophobic, hydrophilic, ionic and/or covalent interactions.

[0602] Polypeptides, protein fusions to, or fragments thereof, of the present invention are useful in enhancing the immunogenicity and/or antigenicity of proliferating cells or tissues, either directly, such as would occur if the polypeptides of the present invention 'vaccinated' the immune response to respond to proliferative antigens and immunogens, or indirectly, such as in activating the expression of proteins known to enhance the immune response (e.g. chemokines), to said antigens and immunogens.

### **Urinary System Disorders**

[0603] Polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention, may be used to treat, prevent, diagnose, and/or prognose disorders of the urinary system, including but not limited to disorders of the renal system, bladder, ureters, and urethra. Renal disorders include, but are not limited to, kidney failure, nephritis, blood vessel disorders of kidney, metabolic and congenital kidney disorders, urinary disorders of the kidney, autoimmune disorders, sclerosis and necrosis, electrolyte imbalance, and kidney cancers.

[0604] Kidney failure diseases include, but are not limited to, acute kidney failure, chronic kidney failure, atheroembolic renal failure, and end-stage renal disease. Inflammatory diseases of the kidney include acute glomerulonephritis, postinfectious glomerulonephritis, rapidly progressive glomerulonephritis, nephrotic syndrome, membranous glomerulonephritis, familial nephrotic syndrome, membranoproliferative



glomerulonephritis I and II, mesangial proliferative glomerulonephritis, chronic glomerulonephritis, acute tubulointerstitial nephritis, chronic tubulointerstitial nephritis, acute post-streptococcal glomerulonephritis (PSGN), pyelonephritis, lupus nephritis, chronic nephritis, interstitial nephritis, and post-streptococcal glomerulonephritis.

[0605] Blood vessel disorders of the kidneys include, but are not limited to, kidney infarction, atheroembolic kidney disease, cortical necrosis, malignant nephrosclerosis, renal vein thrombosis, renal underperfusion, renal ischemia-reperfusion, renal artery embolism, and renal artery stenosis. Kidney disorders resulting from urinary tract problems include, but are not limited to, pyelonephritis, hydronephrosis, urolithiasis (renal lithiasis, nephrolithiasis), reflux nephropathy, urinary tract infections, urinary retention, and acute or chronic unilateral obstructive uropathy.

[0606] Metabolic and congenital disorders of the kidneys include, but are not limited to, renal tubular acidosis, renal glycosuria, nephrogenic diabetes insipidus, cystinuria, Fanconi's syndrome, vitamin D-resistant rickets, Hartnup disease, Bartter's syndrome, Liddle's syndrome, polycystic kidney disease, medullary cystic disease, medullary sponge kidney, Alport's syndrome, nail-patella syndrome, congenital nephrotic syndrome, CRUSH syndrome, horseshoe kidney, diabetic nephropathy, nephrogenic diabetes insipidus, analgesic nephropathy, kidney stones, and membranous nephropathy. Kidney disorders resulting from an autoimmune response include, but are not limited to, systemic lupus erythematosus (SLE), Goodpasture syndrome, IgA nephropathy, and IgM mesangial proliferative glomerulonephritis.

[0607] Sclerotic or necrotic disorders of the kidney include, but are not limited to, glomerulosclerosis, diabetic nephropathy, focal segmental glomerulosclerosis (FSGS), necrotizing glomerulonephritis, and renal papillary necrosis. Kidneys may also develop carcinomas, including, but not limited to, hypernephroma, nephroblastoma, renal cell cancer, transitional cell cancer, squamous cell cancer, and Wilm's tumor.

[0608] Kidney disorders may also result in electrolyte imbalances, including, but not limited to, nephrocalcinosis, pyuria, edema, hydronephritis, proteinuria, hyponatremia, hypernatremia, hypokalemia, hyperkalemia, hypocalcemia, hypercalcemia, hypophosphatemia, and hyperphosphatemia.

[0609] Bladder disorders include, but are not limited to, benign prostatic hyperplasia (BPH), interstitial cystitis (IC), prostatitis, proteinuria, urinary tract infections, urinary

incontinence, urinary retention. Disorders of the ureters and urethra include, but are not limited to, acute or chronic unilateral obstructive uropathy. The bladder, ureters, and urethra may also develop carcinomas, including, but not limited to, superficial bladder cancer, invasive bladder cancer, carcinoma of the ureter, and urethra cancers.

- [0610] Polypeptides may be administered using any method known in the art, including, but not limited to, direct needle injection at the delivery site, intravenous injection, topical administration, catheter infusion, biolistic injectors, particle accelerators, gelfoam sponge depots, other commercially available depot materials, osmotic pumps, oral or suppository solid pharmaceutical formulations, decanting or topical applications during surgery, aerosol delivery. Such methods are known in the art. Polypeptides may be administered as part of a Therapeutic, described in more detail below. Methods of delivering polynucleotides are described in more detail herein.

### **Cardiovascular Disorders**

- [0611] Polynucleotides or polypeptides, or agonists or antagonists of the present invention, may be used to treat, prevent, diagnose, and/or prognose cardiovascular disorders, including, but not limited to, peripheral artery disease, such as limb ischemia.
- [0612] Cardiovascular disorders include cardiovascular abnormalities, such as arterio-arterial fistula, arteriovenous fistula, cerebral arteriovenous malformations, congenital heart defects, pulmonary atresia, and Scimitar Syndrome. Congenital heart defects include aortic coarctation, cor triatriatum, coronary vessel anomalies, crisscross heart, dextrocardia, patent ductus arteriosus, Ebstein's anomaly, Eisenmenger complex, hypoplastic left heart syndrome, levocardia, tetralogy of fallot, transposition of great vessels, double outlet right ventricle, tricuspid atresia, persistent truncus arteriosus, total anomalous pulmonary venous connection, hypoplastic left heart syndrome, and heart septal defects, such as aortopulmonary septal defect, endocardial cushion defects, Lutembacher's Syndrome, atrioventricular canal defect, trigly of Fallot, ventricular heart septal defects.
- [0613] Cardiovascular disorders also include heart disease, such as arrhythmias, carcinoid heart disease, high cardiac output, low cardiac output, cardiac tamponade, endocarditis (including bacterial), heart aneurysm, cardiac arrest, sudden cardiac death, congestive heart failure, congestive cardiomyopathy, paroxysmal dyspnea, cardiac edema, heart

hypertrophy, congestive cardiomyopathy, left ventricular hypertrophy, right ventricular hypertrophy, post-infarction heart rupture, ventricular septal rupture, heart valve diseases, myocardial diseases, myocardial ischemia, pericardial effusion, pericarditis (including constrictive and tuberculous), pneumopericardium, postpericardiotomy syndrome, pulmonary heart disease, rheumatic heart disease, ventricular dysfunction, hyperemia, cardiovascular pregnancy complications, Scimitar Syndrome, diastolic dysfunction, enlarged heart, heart block, J-curve phenomenon, rheumatic heart disease, Marfan syndrome, cardiovascular syphilis, and cardiovascular tuberculosis.

**[0614]** Arrhythmias include sinus arrhythmia, atrial fibrillation, atrial flutter, bradycardia, extrasystole, Adams-Stokes Syndrome, bundle-branch block, sinoatrial block, long QT syndrome, parasystole, Lown-Ganong-Levine Syndrome, Mahaim-type pre-excitation syndrome, Wolff-Parkinson-White syndrome, sick sinus syndrome, tachycardias, and ventricular fibrillation. Tachycardias include paroxysmal tachycardia, supraventricular tachycardia, accelerated idioventricular rhythm, atrioventricular nodal reentry tachycardia, ectopic atrial tachycardia, ectopic junctional tachycardia, sinoatrial nodal reentry tachycardia, sinus tachycardia, Torsades de Pointes, and ventricular tachycardia.

**[0615]** Heart valve disease include aortic valve insufficiency, aortic valve stenosis, heart murmurs, aortic valve prolapse, mitral valve prolapse, tricuspid valve prolapse, mitral valve insufficiency, mitral valve stenosis, pulmonary atresia, pulmonary valve insufficiency, pulmonary valve stenosis, tricuspid atresia, tricuspid valve insufficiency, tricuspid valve stenosis, and bicuspid aortic valve.

**[0616]** Myocardial diseases include alcoholic cardiomyopathy, congestive cardiomyopathy, hypertrophic cardiomyopathy, aortic subvalvular stenosis, pulmonary subvalvular stenosis, restrictive cardiomyopathy, Chagas cardiomyopathy, endocardial fibroelastosis, endomyocardial fibrosis, Kearns Syndrome, Barth syndrome, myocardial reperfusion injury, and myocarditis.

**[0617]** Myocardial ischemias include coronary disease, such as angina pectoris, Prinzmetal's angina, unstable angina, coronary aneurysm, coronary arteriosclerosis, coronary thrombosis, coronary vasospasm, myocardial infarction and myocardial stunning.

**[0618]** Cardiovascular diseases also include vascular diseases such as aneurysms, angiodysplasia, angiomas, bacillary angiomas, Hippel-Lindau Disease, Klippel-

Trenaunay-Weber Syndrome, Sturge-Weber Syndrome, angioneurotic edema, aortic diseases, Takayasu's Arteritis, aortitis, Leriche's Syndrome, arterial occlusive diseases, arteritis, enarteritis, polyarteritis nodosa, cerebrovascular disorders, diabetic angiopathies, diabetic retinopathy, embolisms, thrombosis, erythromelalgia, hemorrhoids, hepatic veno-occlusive disease, hypertension, hypotension (shock), ischemia, peripheral vascular diseases, phlebitis, superficial phlebitis, pulmonary veno-occlusive disease, chronic obstructive pulmonary disease, Buerger's disease, Raynaud's disease, CREST syndrome, retinal vein occlusion, Scimitar syndrome, superior vena cava syndrome, telangiectasia, ataxia telangiectasia, hereditary hemorrhagic telangiectasia, deep vein thrombosis, varicocele, varicose veins, varicose ulcer, vasculitis, and venous insufficiency.

[0619] Aneurysms include dissecting aneurysms, false aneurysms, infected aneurysms, ruptured aneurysms, aortic aneurysms, cerebral aneurysms, coronary aneurysms, heart aneurysms, and iliac aneurysms.

[0620] Arterial occlusive diseases include arteriosclerosis, arteriolosclerosis, atherosclerosis, intermittent claudication, carotid stenosis, fibromuscular dysplasias, mesenteric vascular occlusion, Moyamoya disease, renal artery obstruction, retinal artery occlusion, and thromboangiitis obliterans.

[0621] Cerebrovascular disorders include carotid artery diseases, cerebral amyloid angiopathy, cerebral aneurysm, cerebral anoxia, cerebral arteriosclerosis, cerebral arteriovenous malformation, cerebral artery diseases, cerebral embolism and thrombosis, carotid artery thrombosis, sinus thrombosis, Wallenberg's syndrome, cerebral hemorrhage, epidural hematoma, subdural hematoma, subarachnoid hemorrhage, cerebral infarction, cerebral ischemia (including transient), subclavian steal syndrome, periventricular leukomalacia, vascular headache, cluster headache, migraine, and vertebrobasilar insufficiency.

[0622] Embolisms include air embolisms, amniotic fluid embolisms, cholesterol embolisms, blue toe syndrome, fat embolisms, pulmonary embolisms, and thromboembolisms. Thrombosis include coronary thrombosis, hepatic vein thrombosis, deep vein thrombosis, retinal vein occlusion, carotid artery thrombosis, sinus thrombosis, Wallenberg's syndrome, and thrombophlebitis.

[0623] Ischemia includes cerebral ischemia, ischemic colitis, silent ischemia, compartment syndromes, anterior compartment syndrome, myocardial ischemia, reperfusion injuries,

and peripheral limb ischemia. Vasculitis includes aortitis, arteritis, Behcet's Syndrome, Churg-Strauss Syndrome, mucocutaneous lymph node syndrome, thromboangiitis obliterans, hypersensitivity vasculitis, Schoenlein-Henoch purpura, allergic cutaneous vasculitis, and Wegener's granulomatosis.

- [0624] Cardiovascular diseases can also occur due to electrolyte imbalances that include, but are not limited to hyponatremia, hypernatremia, hypokalemia, hyperkalemia, hypocalcemia, hypercalcemia, hypophosphatemia, and hyperphosphatemia. Neoplasm and/or cancers of the cardiovascular system include, but are not limited to, myxomas, fibromas, and rhabdomyomas.
- [0625] Polypeptides may be administered using any method known in the art, including, but not limited to, direct needle injection at the delivery site, intravenous injection, topical administration, catheter infusion, biolistic injectors, particle accelerators, gelfoam sponge depots, other commercially available depot materials, osmotic pumps, oral or suppositorial solid pharmaceutical formulations, decanting or topical applications during surgery, aerosol delivery. Such methods are known in the art. Polypeptides may be administered as part of a Therapeutic, described in more detail below. Methods of delivering polynucleotides are described in more detail herein.

### **Respiratory Disorders**

- [0626] Polynucleotides or polypeptides, or agonists or antagonists of the present invention may be used to treat, prevent, diagnose, and/or prognose diseases and/or disorders of the respiratory system.
- [0627] Diseases and disorders of the respiratory system include, but are not limited to, nasal vestibulitis, nonallergic rhinitis (e.g., acute rhinitis, chronic rhinitis, atrophic rhinitis, vasomotor rhinitis), nasal polyps, and sinusitis, juvenile angiofibromas, cancer of the nose and juvenile papillomas, vocal cord polyps, nodules (singer's nodules), contact ulcers, vocal cord paralysis, laryngoceles, pharyngitis (e.g., viral and bacterial), tonsillitis, tonsillar cellulitis, parapharyngeal abscess, laryngitis, laryngoceles, and throat cancers (e.g., cancer of the nasopharynx, tonsil cancer, larynx cancer), lung cancer (e.g., squamous cell carcinoma, small cell (oat cell) carcinoma, large cell carcinoma, and adenocarcinoma), allergic disorders (eosinophilic pneumonia, hypersensitivity pneumonitis (e.g., extrinsic allergic alveolitis, allergic interstitial pneumonitis, organic

dust pneumoconiosis, allergic bronchopulmonary aspergillosis, asthma, Wegener's granulomatosis (granulomatous vasculitis), Goodpasture's syndrome)), pneumonia (e.g., bacterial pneumonia (e.g., *Streptococcus pneumoniae* (pneumococcal pneumonia), *Staphylococcus aureus* (staphylococcal pneumonia), Gram-negative bacterial pneumonia (caused by, e.g., *Klebsiella* and *Pseudomas spp.*), *Mycoplasma pneumoniae* pneumonia, *Hemophilus influenzae* pneumonia, *Legionella pneumophila* (Legionnaires' disease), and *Chlamydia psittaci* (Psittacosis)), and viral pneumonia (e.g., influenza, chickenpox (varicella).

[0628] Additional diseases and disorders of the respiratory system include, but are not limited to bronchiolitis, polio (poliomyelitis), croup, respiratory syncytial viral infection, mumps, erythema infectiosum (fifth disease), roseola infantum, progressive rubella panencephalitis, german measles, and subacute sclerosing panencephalitis), fungal pneumonia (e.g., Histoplasmosis, Coccidioidomycosis, Blastomycosis, fungal infections in people with severely suppressed immune systems (e.g., cryptococcosis, caused by *Cryptococcus neoformans*; aspergillosis, caused by *Aspergillus spp.*; candidiasis, caused by *Candida*; and mucormycosis)), *Pneumocystis carinii* (pneumocystis pneumonia), atypical pneumonias (e.g., *Mycoplasma* and *Chlamydia spp.*), opportunistic infection pneumonia, nosocomial pneumonia, chemical pneumonitis, and aspiration pneumonia, pleural disorders (e.g., pleurisy, pleural effusion, and pneumothorax (e.g., simple spontaneous pneumothorax, complicated spontaneous pneumothorax, tension pneumothorax)), obstructive airway diseases (e.g., asthma, chronic obstructive pulmonary disease (COPD), emphysema, chronic or acute bronchitis), occupational lung diseases (e.g., silicosis, black lung (coal workers' pneumoconiosis), asbestosis, berylliosis, occupational asthma, byssinosis, and benign pneumoconioses), Infiltrative Lung Disease (e.g., pulmonary fibrosis (e.g., fibrosing alveolitis, usual interstitial pneumonia), idiopathic pulmonary fibrosis, desquamative interstitial pneumonia, lymphoid interstitial pneumonia, histiocytosis X (e.g., Letterer-Siwe disease, Hand-Schüller-Christian disease, eosinophilic granuloma), idiopathic pulmonary hemosiderosis, sarcoidosis and pulmonary alveolar proteinosis), Acute respiratory distress syndrome (also called, e.g., adult respiratory distress syndrome), edema, pulmonary embolism, bronchitis (e.g., viral, bacterial), bronchiectasis, atelectasis, lung abscess (caused by, e.g., *Staphylococcus aureus* or *Legionella pneumophila*), and cystic fibrosis.

### Anti-Angiogenesis Activity

[0629] The naturally occurring balance between endogenous stimulators and inhibitors of angiogenesis is one in which inhibitory influences predominate. Rastinejad *et al.*, *Cell* 56:345-355 (1989). In those rare instances in which neovascularization occurs under normal physiological conditions, such as wound healing, organ regeneration, embryonic development, and female reproductive processes, angiogenesis is stringently regulated and spatially and temporally delimited. Under conditions of pathological angiogenesis such as that characterizing solid tumor growth, these regulatory controls fail. Unregulated angiogenesis becomes pathologic and sustains progression of many neoplastic and non-neoplastic diseases. A number of serious diseases are dominated by abnormal neovascularization including solid tumor growth and metastases, arthritis, some types of eye disorders, and psoriasis. See, e.g., reviews by Moses *et al.*, *Biotech.* 9:630-634 (1991); Folkman *et al.*, *N. Engl. J. Med.*, 333:1757-1763 (1995); Auerbach *et al.*, *J. Microvasc. Res.* 29:401-411 (1985); Folkman, *Advances in Cancer Research*, eds. Klein and Weinhouse, Academic Press, New York, pp. 175-203 (1985); Patz, *Am. J. Ophthalmol.* 94:715-743 (1982); and Folkman *et al.*, *Science* 221:719-725 (1983). In a number of pathological conditions, the process of angiogenesis contributes to the disease state. For example, significant data have accumulated which suggest that the growth of solid tumors is dependent on angiogenesis. Folkman and Klagsbrun, *Science* 235:442-447 (1987).

[0630] The present invention provides for treatment of diseases or disorders associated with neovascularization by administration of the polynucleotides and/or polypeptides of the invention, as well as agonists or antagonists of the present invention. Malignant and metastatic conditions which can be treated with the polynucleotides and polypeptides, or agonists or antagonists of the invention include, but are not limited to, malignancies, solid tumors, and cancers described herein and otherwise known in the art (for a review of such disorders, see Fishman *et al.*, *Medicine*, 2d Ed., J. B. Lippincott Co., Philadelphia (1985)). Thus, the present invention provides a method of treating an angiogenesis-related disease and/or disorder, comprising administration to an individual in need thereof a therapeutically effective amount of a polynucleotide, polypeptide, antagonist and/or agonist of the invention. For example, polynucleotides, polypeptides, antagonists and/or agonists may be utilized in a variety of additional methods in order to therapeutically treat

a cancer or tumor. Cancers which may be treated with polynucleotides, polypeptides, antagonists and/or agonists include, but are not limited to solid tumors, including prostate, lung, breast, ovarian, stomach, pancreas, larynx, esophagus, testes, liver, parotid, biliary tract, colon, rectum, cervix, uterus, endometrium, kidney, bladder, thyroid cancer; primary tumors and metastases; melanomas; glioblastoma; Kaposi's sarcoma; leiomyosarcoma; non-small cell lung cancer; colorectal cancer; advanced malignancies; and blood born tumors such as leukemias. For example, polynucleotides, polypeptides, antagonists and/or agonists may be delivered topically, in order to treat cancers such as skin cancer, head and neck tumors, breast tumors, and Kaposi's sarcoma.

[0631] Within yet other aspects, polynucleotides, polypeptides, antagonists and/or agonists may be utilized to treat superficial forms of bladder cancer by, for example, intravesical administration. Polynucleotides, polypeptides, antagonists and/or agonists may be delivered directly into the tumor, or near the tumor site, via injection or a catheter. Of course, as the artisan of ordinary skill will appreciate, the appropriate mode of administration will vary according to the cancer to be treated. Other modes of delivery are discussed herein.

[0632] Polynucleotides, polypeptides, antagonists and/or agonists may be useful in treating other disorders, besides cancers, which involve angiogenesis. These disorders include, but are not limited to: benign tumors, for example hemangiomas, acoustic neuromas, neurofibromas, trachomas, and pyogenic granulomas; arteriosclerotic plaques; ocular angiogenic diseases, for example, diabetic retinopathy, retinopathy of prematurity, macular degeneration, corneal graft rejection, neovascular glaucoma, retrolental fibroplasia, rubeosis, retinoblastoma, uveitis and Pterygia (abnormal blood vessel growth) of the eye; rheumatoid arthritis; psoriasis; delayed wound healing; endometriosis; vasculogenesis; granulations; hypertrophic scars (keloids); nonunion fractures; scleroderma; trachoma; vascular adhesions; myocardial angiogenesis; coronary collaterals; cerebral collaterals; arteriovenous malformations; ischemic limb angiogenesis; Osler-Webber Syndrome; plaque neovascularization; telangiectasia; hemophilic joints; angiofibroma; fibromuscular dysplasia; wound granulation; Crohn's disease; and atherosclerosis.

[0633] For example, within one aspect of the present invention methods are provided for treating hypertrophic scars and keloids, comprising the step of administering a



polynucleotide, polypeptide, antagonist and/or agonist of the invention to a hypertrophic scar or keloid.

[0634] Within one embodiment of the present invention polynucleotides, polypeptides, antagonists and/or agonists of the invention are directly injected into a hypertrophic scar or keloid, in order to prevent the progression of these lesions. This therapy is of particular value in the prophylactic treatment of conditions which are known to result in the development of hypertrophic scars and keloids (e.g., burns), and is preferably initiated after the proliferative phase has had time to progress (approximately 14 days after the initial injury), but before hypertrophic scar or keloid development. As noted above, the present invention also provides methods for treating neovascular diseases of the eye, including for example, corneal neovascularization, neovascular glaucoma, proliferative diabetic retinopathy, retrolental fibroplasia and macular degeneration.

[0635] Moreover, ocular disorders associated with neovascularization which can be treated with the polynucleotides and polypeptides of the present invention (including agonists and/or antagonists) include, but are not limited to: neovascular glaucoma, diabetic retinopathy, retinoblastoma, retrolental fibroplasia, uveitis, retinopathy of prematurity, macular degeneration, corneal graft neovascularization, as well as other eye inflammatory diseases, ocular tumors and diseases associated with choroidal or iris neovascularization. See, e.g., reviews by Waltman *et al.*, *Am. J. Ophthalmol.* 85:704-710 (1978) and Gartner *et al.*, *Surv. Ophthalmol.* 22:291-312 (1978).

[0636] Thus, within one aspect of the present invention methods are provided for treating neovascular diseases of the eye such as corneal neovascularization (including corneal graft neovascularization), comprising the step of administering to a patient a therapeutically effective amount of a compound (as described above) to the cornea, such that the formation of blood vessels is inhibited. Briefly, the cornea is a tissue, which normally lacks blood vessels. In certain pathological conditions however, capillaries may extend into the cornea from the pericorneal vascular plexus of the limbus. When the cornea becomes vascularized, it also becomes clouded, resulting in a decline in the patient's visual acuity. Visual loss may become complete if the cornea completely opacitates. A wide variety of disorders can result in corneal neovascularization, including for example, corneal infections (e.g., trachoma, herpes simplex keratitis, leishmaniasis and onchocerciasis), immunological processes (e.g., graft rejection and Stevens-Johnson's

syndrome), alkali burns, trauma, inflammation (of any cause), toxic and nutritional deficiency states, and as a complication of wearing contact lenses.

[0637] Within particularly preferred embodiments of the invention, may be prepared for topical administration in saline (combined with any of the preservatives and antimicrobial agents commonly used in ocular preparations), and administered in eyedrop form. The solution or suspension may be prepared in its pure form and administered several times daily. Alternatively, anti-angiogenic compositions, prepared as described above, may also be administered directly to the cornea. Within preferred embodiments, the anti-angiogenic composition is prepared with a muco-adhesive polymer, which binds to cornea. Within further embodiments, the anti-angiogenic factors or anti-angiogenic compositions may be utilized as an adjunct to conventional steroid therapy. Topical therapy may also be useful prophylactically in corneal lesions which are known to have a high probability of inducing an angiogenic response (such as chemical burns). In these instances the treatment, likely in combination with steroids, may be instituted immediately to help prevent subsequent complications.

[0638] Within other embodiments, the compounds described above may be injected directly into the corneal stroma by an ophthalmologist under microscopic guidance. The preferred site of injection may vary with the morphology of the individual lesion, but the goal of the administration would be to place the composition at the advancing front of the vasculature (i.e., interspersed between the blood vessels and the normal cornea). In most cases this would involve perilimbic corneal injection to "protect" the cornea from the advancing blood vessels. This method may also be utilized shortly after a corneal insult in order to prophylactically prevent corneal neovascularization. In this situation, the material could be injected in the perilimbic cornea interspersed between the corneal lesion and its undesired potential limbic blood supply. Such methods may also be utilized in a similar fashion to prevent capillary invasion of transplanted corneas. In a sustained-release form, injections might only be required 2-3 times per year. A steroid could also be added to the injection solution to reduce inflammation resulting from the injection itself.

[0639] Within another aspect of the present invention, methods are provided for treating neovascular glaucoma, comprising the step of administering to a patient a therapeutically effective amount of a polynucleotide, polypeptide, antagonist and/or agonist to the eye, such that the formation of blood vessels is inhibited. In one embodiment, the compound

may be administered topically to the eye in order to treat early forms of neovascular glaucoma. Within other embodiments, the compound may be implanted by injection into the region of the anterior chamber angle. Within other embodiments, the compound may also be placed in any location such that the compound is continuously released into the aqueous humor. Within another aspect of the present invention, methods are provided for treating proliferative diabetic retinopathy, comprising the step of administering to a patient a therapeutically effective amount of a polynucleotide, polypeptide, antagonist and/or agonist to the eyes, such that the formation of blood vessels is inhibited.

[0640] Within particularly preferred embodiments of the invention, proliferative diabetic retinopathy may be treated by injection into the aqueous humor or the vitreous, in order to increase the local concentration of the polynucleotide, polypeptide, antagonist and/or agonist in the retina. Preferably, this treatment should be initiated prior to the acquisition of severe disease requiring photocoagulation.

[0641] Within another aspect of the present invention, methods are provided for treating retrolental fibroplasia, comprising the step of administering to a patient a therapeutically effective amount of a polynucleotide, polypeptide, antagonist and/or agonist to the eye, such that the formation of blood vessels is inhibited. The compound may be administered topically, via intravitreal injection and/or via intraocular implants.

[0642] Additionally, disorders which can be treated with the polynucleotides, polypeptides, agonists and/or antagonists include, but are not limited to, hemangioma, arthritis, psoriasis, angiofibroma, atherosclerotic plaques, delayed wound healing, granulations, hemophilic joints, hypertrophic scars, nonunion fractures, Osler-Weber syndrome, pyogenic granuloma, scleroderma, trachoma, and vascular adhesions.

[0643] Moreover, disorders and/or states, which can be treated, prevented, diagnosed and/or prognosed with the polynucleotides, polypeptides, agonists and/or antagonists of the invention include, but are not limited to, solid tumors, blood born tumors such as leukemias, tumor metastasis, Kaposi's sarcoma, benign tumors, for example hemangiomas, acoustic neuromas, neurofibromas, trachomas, and pyogenic granulomas, rheumatoid arthritis, psoriasis, ocular angiogenic diseases, for example, diabetic retinopathy, retinopathy of prematurity, macular degeneration, corneal graft rejection, neovascular glaucoma, retrolental fibroplasia, rubeosis, retinoblastoma, and uveitis, delayed wound healing, endometriosis, vasculogenesis, granulations, hypertrophic scars

(keloids), nonunion fractures, scleroderma, trachoma, vascular adhesions, myocardial angiogenesis, coronary collaterals, cerebral collaterals, arteriovenous malformations, ischemic limb angiogenesis, Osler-Webber Syndrome, plaque neovascularization, telangiectasia, hemophiliac joints, angiofibroma fibromuscular dysplasia, wound granulation, Crohn's disease, atherosclerosis, birth control agent by preventing vascularization required for embryo implantation controlling menstruation, diseases that have angiogenesis as a pathologic consequence such as cat scratch disease (Rochele minalia quintosa), ulcers (*Helicobacter pylori*), Bartonellosis and bacillary angiomatosis.

[0644] In one aspect of the birth control method, an amount of the compound sufficient to block embryo implantation is administered before or after intercourse and fertilization have occurred, thus providing an effective method of birth control, possibly a "morning after" method. Polynucleotides, polypeptides, agonists and/or agonists may also be used in controlling menstruation or administered as either a peritoneal lavage fluid or for peritoneal implantation in the treatment of endometriosis.

[0645] Polynucleotides, polypeptides, agonists and/or agonists of the present invention may be incorporated into surgical sutures in order to prevent stitch granulomas.

[0646] Polynucleotides, polypeptides, agonists and/or agonists may be utilized in a wide variety of surgical procedures. For example, within one aspect of the present invention a compositions (in the form of, for example, a spray or film) may be utilized to coat or spray an area prior to removal of a tumor, in order to isolate normal surrounding tissues from malignant tissue, and/or to prevent the spread of disease to surrounding tissues. Within other aspects of the present invention, compositions (e.g., in the form of a spray) may be delivered via endoscopic procedures in order to coat tumors, or inhibit angiogenesis in a desired locale. Within yet other aspects of the present invention, surgical meshes, which have been coated with anti- angiogenic compositions of the present invention may be utilized in any procedure wherein a surgical mesh might be utilized. For example, within one embodiment of the invention a surgical mesh laden with an anti-angiogenic composition may be utilized during abdominal cancer resection surgery (e.g., subsequent to colon resection) in order to provide support to the structure, and to release an amount of the anti-angiogenic factor.

[0647] Within further aspects of the present invention, methods are provided for treating tumor excision sites, comprising administering a polynucleotide, polypeptide,

agonist and/or agonist to the resection margins of a tumor subsequent to excision, such that the local recurrence of cancer and the formation of new blood vessels at the site is inhibited. Within one embodiment of the invention, the anti-angiogenic compound is administered directly to the tumor excision site (e.g., applied by swabbing, brushing or otherwise coating the resection margins of the tumor with the anti-angiogenic compound). Alternatively, the anti-angiogenic compounds may be incorporated into known surgical pastes prior to administration. Within particularly preferred embodiments of the invention, the anti-angiogenic compounds are applied after hepatic resections for malignancy, and after neurosurgical operations.

**[0648]** Within one aspect of the present invention, polynucleotides, polypeptides, agonists and/or agonists may be administered to the resection margin of a wide variety of tumors, including for example, breast, colon, brain and hepatic tumors. For example, within one embodiment of the invention, anti-angiogenic compounds may be administered to the site of a neurological tumor subsequent to excision, such that the formation of new blood vessels at the site are inhibited.

**[0649]** The polynucleotides, polypeptides, agonists and/or agonists of the present invention may also be administered along with other anti-angiogenic factors. Representative examples of other anti-angiogenic factors include: Anti-Invasive Factor, retinoic acid and derivatives thereof, paclitaxel, Suramin, Tissue Inhibitor of Metalloproteinase-1, Tissue Inhibitor of Metalloproteinase-2, Plasminogen Activator Inhibitor-1, Plasminogen Activator Inhibitor-2, and various forms of the lighter "d group" transition metals.

**[0650]** Lighter "d group" transition metals include, for example, vanadium, molybdenum, tungsten, titanium, niobium, and tantalum species. Such transition metal species may form transition metal complexes. Suitable complexes of the above-mentioned transition metal species include oxo transition metal complexes.

**[0651]** Representative examples of vanadium complexes include oxo vanadium complexes such as vanadate and vanadyl complexes. Suitable vanadate complexes include metavanadate and orthovanadate complexes such as, for example, ammonium metavanadate, sodium metavanadate, and sodium orthovanadate. Suitable vanadyl complexes include, for example, vanadyl acetylacetonate and vanadyl sulfate including vanadyl sulfate hydrates such as vanadyl sulfate mono- and trihydrates.

[0652] Representative examples of tungsten and molybdenum complexes also include oxo complexes. Suitable oxo tungsten complexes include tungstate and tungsten oxide complexes. Suitable tungstate complexes include ammonium tungstate, calcium tungstate, sodium tungstate dihydrate, and tungstic acid. Suitable tungsten oxides include tungsten (IV) oxide and tungsten (VI) oxide. Suitable oxo molybdenum complexes include molybdate, molybdenum oxide, and molybdenyl complexes. Suitable molybdate complexes include ammonium molybdate and its hydrates, sodium molybdate and its hydrates, and potassium molybdate and its hydrates. Suitable molybdenum oxides include molybdenum (VI) oxide, molybdenum (VI) oxide, and molybdic acid. Suitable molybdenyl complexes include, for example, molybdenyl acetylacetonate. Other suitable tungsten and molybdenum complexes include hydroxo derivatives derived from, for example, glycerol, tartaric acid, and sugars.

[0653] A wide variety of other anti-angiogenic factors may also be utilized within the context of the present invention. Representative examples include platelet factor 4; protamine sulphate; sulphated chitin derivatives (prepared from queen crab shells), (Murata et al., *Cancer Res.* 51:22-26 (1991)); Sulphated Polysaccharide Peptidoglycan Complex (SP- PG) (the function of this compound may be enhanced by the presence of steroids such as estrogen, and tamoxifen citrate); Staurosporine; modulators of matrix metabolism, including for example, proline analogs, cishydroxyproline, d,L-3,4-dehydroproline, Thiaproline, alpha,alpha-dipyridyl, aminopropionitrile fumarate; 4-propyl-5-(4-pyridinyl)-2(3H)-oxazolone; Methotrexate; Mitoxantrone; Heparin; Interferons; 2 Macroglobulin-serum; ChIMP-3 (Pavloff et al., *J. Bio. Chem.* 267:17321-17326 (1992)); Chymostatin (Tomkinson et al., *Biochem J.* 286:475-480 (1992)); Cyclodextrin Tetradecasulfate; Eponemycin; Camptothecin; Fumagillin (Ingber et al., *Nature* 348:555-557 (1990)); Gold Sodium Thiomalate ("GST"; Matsubara and Ziff, *J. Clin. Invest.* 79:1440-1446 (1987)); anticollagenase-serum; alpha2-antiplasmin (Holmes et al., *J. Biol. Chem.* 262(4):1659-1664 (1987)); Bisantrene (National Cancer Institute); Lobenzarit disodium (N-(2)-carboxyphenyl-4- chloroanthronilic acid disodium or "CCA"; Takeuchi et al., *Agents Actions* 36:312-316, 1992); Thalidomide; Angostatic steroid; AGM-1470; carboxynaminolimidazole; and metalloproteinase inhibitors such as BB94.

**Musculoskeletal System Disorders**

- [0654] Polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention, may be used to treat, prevent, diagnose, and/or prognose disorders of the musculoskeletal system, including but not limited to, disorders of the bone, joints, ligaments, tendons, bursa, muscle, and/or neoplasms and cancers associated with musculoskeletal tissue.
- [0655] Diseases or disorders of the bone include, but are not limited to, Albers-Schönberg disease, bowlegs, heel spurs, Köhler's bone disease, knock-knees, Legg-Calvé-Perthes disease, Marfan's syndrome, mucopolysaccharidoses, Osgood-Schlatter disease, osteochondroses, osteochondrodysplasia, osteomyelitis, osteopetroses, osteoporosis (postmenopausal, senile, and juvenile), Paget's disease, Scheuermann's disease, scoliosis, Sever's disease, and patellofemoral stress syndrome.
- [0656] Joint diseases or disorders include, but are not limited to, ankylosing spondylitis, Behçet's syndrome, CREST syndrome, Ehlers-Danlos syndrome, infectious arthritis, discoid lupus erythematosus, systemic lupus erythematosus, Lyme disease, osteoarthritis, psoriatic arthritis, relapsing polychondrites, Reiter's syndrome, rheumatoid arthritis (adult and juvenile), scleroderma, and Still's disease.
- [0657] Diseases or disorders affecting ligaments, tendons, or bursa include, but are not limited to, ankle sprain, bursitis, posterior Achilles tendon bursitis (Haglund's deformity), anterior Achilles tendon bursitis (Albert's disease), tendinitis, tenosynovitis, popliteus tendinitis, Achilles tendinitis, medial or lateral epicondylitis, rotator cuff tendinitis, spasmodic torticollis, and fibromyalgia syndrome.
- [0658] Muscle diseases or disorders include, but are not limited to, Becker's muscular dystrophy, Duchenne's muscular dystrophy, Landouzy-Dejerine muscular dystrophy, Leyden-Möbius muscular dystrophy, Erb's muscular dystrophy, Charcot's joints, dermatomyositis, gout, pseudogout, glycogen storage diseases, Pompe's disease, mitochondrial myopathy, periodic paralysis, polymyalgia rheumatica, polymyositis, Steinert's disease, Thomsen's disease, anterolateral and posteromedial shin splints, posterior femoral muscle strain, and fibromyositis.
- [0659] Musculoskeletal tissue may also develop cancers and/or neoplasms that include, but are not limited to, osteochondroma, benign chondroma, chondroblastoma, chondromyxoid fibroma, osteoid osteoma, giant cell tumor, multiple myeloma, osteosarcoma,

fibrosarcoma, malignant fibrous histiocytoma, chondrosarcoma, Ewing's tumor, and malignant lymphoma of bone.

### **Neural Activity and Neurological Diseases**

[0660] The polynucleotides, polypeptides and agonists or antagonists of the invention may be used for the diagnosis and/or treatment of diseases, disorders, damage or injury of the brain and/or nervous system. Nervous system disorders that can be treated with the compositions of the invention (e.g., polypeptides, polynucleotides, and/or agonists or antagonists), include, but are not limited to, nervous system injuries, and diseases or disorders which result in either a disconnection of axons, a diminution or degeneration of neurons, or demyelination. Nervous system lesions which may be treated in a patient (including human and non-human mammalian patients) according to the methods of the invention, include but are not limited to, the following lesions of either the central (including spinal cord, brain) or peripheral nervous systems: (1) ischemic lesions, in which a lack of oxygen in a portion of the nervous system results in neuronal injury or death, including cerebral infarction or ischemia, or spinal cord infarction or ischemia; (2) traumatic lesions, including lesions caused by physical injury or associated with surgery, for example, lesions which sever a portion of the nervous system, or compression injuries; (3) malignant lesions, in which a portion of the nervous system is destroyed or injured by malignant tissue which is either a nervous system associated malignancy or a malignancy derived from non-nervous system tissue; (4) infectious lesions, in which a portion of the nervous system is destroyed or injured as a result of infection, for example, by an abscess or associated with infection by human immunodeficiency virus, herpes zoster, or herpes simplex virus or with Lyme disease, tuberculosis, or syphilis; (5) degenerative lesions, in which a portion of the nervous system is destroyed or injured as a result of a degenerative process including but not limited to, degeneration associated with Parkinson's disease, Alzheimer's disease, Huntington's chorea, or amyotrophic lateral sclerosis (ALS); (6) lesions associated with nutritional diseases or disorders, in which a portion of the nervous system is destroyed or injured by a nutritional disorder or disorder of metabolism including, but not limited to, vitamin B12 deficiency, folic acid deficiency, Wernicke disease, tobacco-alcohol amblyopia, Marchiafava-Bignami disease (primary degeneration of the corpus callosum), and alcoholic cerebellar degeneration; (7) neurological lesions



associated with systemic diseases including, but not limited to, diabetes (diabetic neuropathy, Bell's palsy), systemic lupus erythematosus, carcinoma, or sarcoidosis; (8) lesions caused by toxic substances including alcohol, lead, or particular neurotoxins; and (9) demyelinated lesions in which a portion of the nervous system is destroyed or injured by a demyelinating disease including, but not limited to, multiple sclerosis, human immunodeficiency virus-associated myelopathy, transverse myelopathy or various etiologies, progressive multifocal leukoencephalopathy, and central pontine myelinolysis.

[0661] In one embodiment, the polypeptides, polynucleotides, or agonists or antagonists of the invention are used to protect neural cells from the damaging effects of hypoxia. In a further preferred embodiment, the polypeptides, polynucleotides, or agonists or antagonists of the invention are used to protect neural cells from the damaging effects of cerebral hypoxia. According to this embodiment, the compositions of the invention are used to treat or prevent neural cell injury associated with cerebral hypoxia. In one non-exclusive aspect of this embodiment, the polypeptides, polynucleotides, or agonists or antagonists of the invention, are used to treat or prevent neural cell injury associated with cerebral ischemia. In another non-exclusive aspect of this embodiment, the polypeptides, polynucleotides, or agonists or antagonists of the invention are used to treat or prevent neural cell injury associated with cerebral infarction.

[0662] In another preferred embodiment, the polypeptides, polynucleotides, or agonists or antagonists of the invention are used to treat or prevent neural cell injury associated with a stroke. In a specific embodiment, the polypeptides, polynucleotides, or agonists or antagonists of the invention are used to treat or prevent cerebral neural cell injury associated with a stroke.

[0663] In another preferred embodiment, the polypeptides, polynucleotides, or agonists or antagonists of the invention are used to treat or prevent neural cell injury associated with a heart attack. In a specific embodiment, the polypeptides, polynucleotides, or agonists or antagonists of the invention are used to treat or prevent cerebral neural cell injury associated with a heart attack.

[0664] The compositions of the invention which are useful for treating or preventing a nervous system disorder may be selected by testing for biological activity in promoting the survival or differentiation of neurons. For example, and not by way of limitation, compositions of the invention which elicit any of the following effects may be useful

according to the invention: (1) increased survival time of neurons in culture either in the presence or absence of hypoxia or hypoxic conditions; (2) increased sprouting of neurons in culture or *in vivo*; (3) increased production of a neuron-associated molecule in culture or *in vivo*, e.g., choline acetyltransferase or acetylcholinesterase with respect to motor neurons; or (4) decreased symptoms of neuron dysfunction *in vivo*. Such effects may be measured by any method known in the art. In preferred, non-limiting embodiments, increased survival of neurons may routinely be measured using a method set forth herein or otherwise known in the art, such as, for example, in Zhang *et al.*, *Proc Natl Acad Sci USA* 97:3637-42 (2000) or in Arakawa *et al.*, *J. Neurosci.*, 10:3507-15 (1990); increased sprouting of neurons may be detected by methods known in the art, such as, for example, the methods set forth in Pestronk *et al.*, *Exp. Neurol.*, 70:65-82 (1980), or Brown *et al.*, *Ann. Rev. Neurosci.*, 4:17-42 (1981); increased production of neuron-associated molecules may be measured by bioassay, enzymatic assay, antibody binding, Northern blot assay, etc., using techniques known in the art and depending on the molecule to be measured; and motor neuron dysfunction may be measured by assessing the physical manifestation of motor neuron disorder, e.g., weakness, motor neuron conduction velocity, or functional disability.

[0665] In specific embodiments, motor neuron disorders that may be treated according to the invention include, but are not limited to, disorders such as infarction, infection, exposure to toxin, trauma, surgical damage, degenerative disease or malignancy that may affect motor neurons as well as other components of the nervous system, as well as disorders that selectively affect neurons such as amyotrophic lateral sclerosis, and including, but not limited to, progressive spinal muscular atrophy, progressive bulbar palsy, primary lateral sclerosis, infantile and juvenile muscular atrophy, progressive bulbar paralysis of childhood (Fazio-Londe syndrome), poliomyelitis and the post polio syndrome, and Hereditary Motor-sensory Neuropathy (Charcot-Marie-Tooth Disease).

[0666] Further, polypeptides or polynucleotides of the invention may play a role in neuronal survival; synapse formation; conductance; neural differentiation, etc. Thus, compositions of the invention (including polynucleotides, polypeptides, and agonists or antagonists) may be used to diagnose and/or treat or prevent diseases or disorders associated with these roles, including, but not limited to, learning and/or cognition disorders. The compositions of the invention may also be useful in the treatment or

prevention of neurodegenerative disease states and/or behavioural disorders. Such neurodegenerative disease states and/or behavioral disorders include, but are not limited to, Alzheimer's Disease, Parkinson's Disease, Huntington's Disease, Tourette Syndrome, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder, panic disorder, learning disabilities, ALS, psychoses, autism, and altered behaviors, including disorders in feeding, sleep patterns, balance, and perception. In addition, compositions of the invention may also play a role in the treatment, prevention and/or detection of developmental disorders associated with the developing embryo, or sexually-linked disorders.

[0667] Additionally, polypeptides, polynucleotides and/or agonists or antagonists of the invention, may be useful in protecting neural cells from diseases, damage, disorders, or injury, associated with cerebrovascular disorders including, but not limited to, carotid artery diseases (e.g., carotid artery thrombosis, carotid stenosis, or Moyamoya Disease), cerebral amyloid angiopathy, cerebral aneurysm, cerebral anoxia, cerebral arteriosclerosis, cerebral arteriovenous malformations, cerebral artery diseases, cerebral embolism and thrombosis (e.g., carotid artery thrombosis, sinus thrombosis, or Wallenberg's Syndrome), cerebral hemorrhage (e.g., epidural or subdural hematoma, or subarachnoid hemorrhage), cerebral infarction, cerebral ischemia (e.g., transient cerebral ischemia, Subclavian Steal Syndrome, or vertebrobasilar insufficiency), vascular dementia (e.g., multi-infarct), leukomalacia, periventricular, and vascular headache (e.g., cluster headache or migraines).

[0668] In accordance with yet a further aspect of the present invention, there is provided a process for utilizing polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, for therapeutic purposes, for example, to stimulate neurological cell proliferation and/or differentiation. Therefore, polynucleotides, polypeptides, agonists and/or antagonists of the invention may be used to treat and/or detect neurologic diseases. Moreover, polynucleotides or polypeptides, or agonists or antagonists of the invention, can be used as a marker or detector of a particular nervous system disease or disorder.

[0669] Examples of neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include brain diseases, such as metabolic brain diseases which includes phenylketonuria such as maternal phenylketonuria, pyruvate carboxylase deficiency, pyruvate dehydrogenase complex deficiency, Wernicke's Encephalopathy, brain edema, brain

neoplasms such as cerebellar neoplasms which include infratentorial neoplasms, cerebral ventricle neoplasms such as choroid plexus neoplasms, hypothalamic neoplasms, supratentorial neoplasms, canavan disease, cerebellar diseases such as cerebellar ataxia which include spinocerebellar degeneration such as ataxia telangiectasia, cerebellar dyssynergia, Friederich's Ataxia, Machado-Joseph Disease, olivopontocerebellar atrophy, cerebellar neoplasms such as infratentorial neoplasms, diffuse cerebral sclerosis such as encephalitis periaxialis, globoid cell leukodystrophy, metachromatic leukodystrophy and subacute sclerosing panencephalitis.

[0670] Additional neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include cerebrovascular disorders (such as carotid artery diseases which include carotid artery thrombosis, carotid stenosis and Moyamoya Disease), cerebral amyloid angiopathy, cerebral aneurysm, cerebral anoxia, cerebral arteriosclerosis, cerebral arteriovenous malformations, cerebral artery diseases, cerebral embolism and thrombosis such as carotid artery thrombosis, sinus thrombosis and Wallenberg's Syndrome, cerebral hemorrhage such as epidural hematoma, subdural hematoma and subarachnoid hemorrhage, cerebral infarction, cerebral ischemia such as transient cerebral ischemia, Subclavian Steal Syndrome and vertebrobasilar insufficiency, vascular dementia such as multi-infarct dementia, periventricular leukomalacia, vascular headache such as cluster headache and migraine.

[0671] Additional neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include dementia such as AIDS Dementia Complex, presenile dementia such as Alzheimer's Disease and Creutzfeldt-Jakob Syndrome, senile dementia such as Alzheimer's Disease and progressive supranuclear palsy, vascular dementia such as multi-infarct dementia, encephalitis which include encephalitis periaxialis, viral encephalitis such as epidemic encephalitis, Japanese Encephalitis, St. Louis Encephalitis, tick-borne encephalitis and West Nile Fever, acute disseminated encephalomyelitis, meningoencephalitis such as uveomeningoencephalitic syndrome, Postencephalitic Parkinson Disease and subacute sclerosing panencephalitis, encephalomalacia such as periventricular leukomalacia, epilepsy such as generalized epilepsy which includes infantile spasms, absence epilepsy, myoclonic epilepsy which includes MERRF

Syndrome, tonic-clonic epilepsy, partial epilepsy such as complex partial epilepsy, frontal lobe epilepsy and temporal lobe epilepsy, post-traumatic epilepsy, status epilepticus such as *Epilepsia Partialis Continua*, and *Hallervorden-Spatz Syndrome*.

[0672] Additional neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include hydrocephalus such as *Dandy-Walker Syndrome* and normal pressure hydrocephalus, hypothalamic diseases such as hypothalamic neoplasms, cerebral malaria, narcolepsy which includes cataplexy, bulbar poliomyelitis, cerebri pseudotumor, *Rett Syndrome*, *Reye's Syndrome*, thalamic diseases, cerebral toxoplasmosis, intracranial tuberculoma and *Zellweger Syndrome*, central nervous system infections such as *AIDS Dementia Complex*, *Brain Abscess*, subdural empyema, encephalomyelitis such as *Equine Encephalomyelitis*, *Venezuelan Equine Encephalomyelitis*, *Necrotizing Hemorrhagic Encephalomyelitis*, *Visna*, and cerebral malaria.

[0673] Additional neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include meningitis such as arachnoiditis, aseptic meningitis such as viral meningitis which includes lymphocytic choriomeningitis, Bacterial meningitis which includes *Haemophilus Meningitis*, *Listeria Meningitis*, *Meningococcal Meningitis* such as *Waterhouse-Friderichsen Syndrome*, *Pneumococcal Meningitis* and meningeal tuberculosis, fungal meningitis such as *Cryptococcal Meningitis*, subdural effusion, meningoencephalitis such as *uvemeningoencephalitic syndrome*, myelitis such as transverse myelitis, neurosyphilis such as *tabes dorsalis*, poliomyelitis which includes bulbar poliomyelitis and postpoliomyelitis syndrome, prion diseases (such as *Creutzfeldt-Jakob Syndrome*, *Bovine Spongiform Encephalopathy*, *Gerstmann-Straussler Syndrome*, *Kuru*, *Scrapie*), and cerebral toxoplasmosis.

[0674] Additional neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include central nervous system neoplasms such as brain neoplasms that include cerebellar neoplasms such as infratentorial neoplasms, cerebral ventricle neoplasms such as choroid plexus neoplasms, hypothalamic neoplasms and supratentorial neoplasms, meningeal neoplasms, spinal cord neoplasms which include epidural neoplasms, demyelinating diseases such as *Canavan Diseases*, diffuse cerebral sclerosis which includes

adrenoleukodystrophy, encephalitis periaxialis, globoid cell leukodystrophy, diffuse cerebral sclerosis such as metachromatic leukodystrophy, allergic encephalomyelitis, necrotizing hemorrhagic encephalomyelitis, progressive multifocal leukoencephalopathy, multiple sclerosis, central pontine myelinolysis, transverse myelitis, neuromyelitis optica, Scrapie, Swayback, Chronic Fatigue Syndrome, Visna, High Pressure Nervous Syndrome, Meningism, spinal cord diseases such as amyotonia congenita, amyotrophic lateral sclerosis, spinal muscular atrophy such as Werdnig-Hoffmann Disease, spinal cord compression, spinal cord neoplasms such as epidural neoplasms, syringomyelia, Tabes Dorsalis, Stiff-Man Syndrome, mental retardation such as Angelman Syndrome, Cri-du-Chat Syndrome, De Lange's Syndrome, Down Syndrome, Gangliosidoses such as gangliosidoses G(M1), Sandhoff Disease, Tay-Sachs Disease, Hartnup Disease, homocystinuria, Laurence-Moon- Biedl Syndrome, Lesch-Nyhan Syndrome, Maple Syrup Urine Disease, mucopolipidosis such as fucosidosis, neuronal ceroid-lipofuscinosis, oculocerebrorenal syndrome, phenylketonuria such as maternal phenylketonuria, Prader-Willi Syndrome, Rett Syndrome, Rubinstein-Taybi Syndrome, Tuberous Sclerosis, WAGR Syndrome, nervous system abnormalities such as holoprosencephaly, neural tube defects such as anencephaly which includes hydrangencephaly, Arnold-Chairi Deformity, encephalocele, meningocele, meningomyelocele, spinal dysraphism such as spina bifida cystica and spina bifida occulta.

- [0675] Additional neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include hereditary motor and sensory neuropathies which include Charcot-Marie Disease, Hereditary optic atrophy, Refsum's Disease, hereditary spastic paraplegia, Werdnig-Hoffmann Disease, Hereditary Sensory and Autonomic Neuropathies such as Congenital Analgesia and Familial Dysautonomia, Neurologic manifestations (such as agnosia that include Gerstmann's Syndrome, Amnesia such as retrograde amnesia, apraxia, neurogenic bladder, cataplexy, communicative disorders such as hearing disorders that includes deafness, partial hearing loss, loudness recruitment and tinnitus, language disorders such as aphasia which include agraphia, anomia, broca aphasia, and Wernicke Aphasia, Dyslexia such as Acquired Dyslexia, language development disorders, speech disorders such as aphasia which includes anomia, broca aphasia and Wernicke Aphasia, articulation disorders, communicative disorders such as speech disorders which include dysarthria,

echolalia, mutism and stuttering, voice disorders such as aphonia and hoarseness, decerebrate state, delirium, fasciculation, hallucinations, meningism, movement disorders such as angelman syndrome, ataxia, athetosis, chorea, dystonia, hypokinesia, muscle hypotonia, myoclonus, tic, torticollis and tremor, muscle hypertonia such as muscle rigidity such as stiff-man syndrome, muscle spasticity, paralysis such as facial paralysis which includes Herpes Zoster Oticus, Gastroparesis, Hemiplegia, ophthalmoplegia such as diplopia, Duane's Syndrome, Horner's Syndrome, Chronic progressive external ophthalmoplegia such as Kearns Syndrome, Bulbar Paralysis, Tropical Spastic Paraparesis, Paraplegia such as Brown-Sequard Syndrome, quadriplegia, respiratory paralysis and vocal cord paralysis, paresis, phantom limb, taste disorders such as ageusia and dysgeusia, vision disorders such as amblyopia, blindness, color vision defects, diplopia, hemianopsia, scotoma and subnormal vision, sleep disorders such as hypersomnia which includes Kleine-Levin Syndrome, insomnia, and somnambulism, spasm such as trismus, unconsciousness such as coma, persistent vegetative state and syncope and vertigo, neuromuscular diseases such as amyotonia congenita, amyotrophic lateral sclerosis, Lambert-Eaton Myasthenic Syndrome, motor neuron disease, muscular atrophy such as spinal muscular atrophy, Charcot-Marie Disease and Werdnig-Hoffmann Disease, Postpoliomyelitis Syndrome, Muscular Dystrophy, Myasthenia Gravis, Myotonia Atrophica, Myotonia Confenita, Nemaline Myopathy, Familial Periodic Paralysis, Multiplex Paramyoclonus, Tropical Spastic Paraparesis and Stiff-Man Syndrome, peripheral nervous system diseases such as acrodynia, amyloid neuropathies, autonomic nervous system diseases such as Adie's Syndrome, Barre-Lieou Syndrome, Familial Dysautonomia, Horner's Syndrome, Reflex Sympathetic Dystrophy and Shy-Drager Syndrome, Cranial Nerve Diseases such as Acoustic Nerve Diseases such as Acoustic Neuroma which includes Neurofibromatosis 2, Facial Nerve Diseases such as Facial Neuralgia, Melkersson-Rosenthal Syndrome, ocular motility disorders which includes amblyopia, nystagmus, oculomotor nerve paralysis, ophthalmoplegia such as Duane's Syndrome, Horner's Syndrome, Chronic Progressive External Ophthalmoplegia which includes Kearns Syndrome, Strabismus such as Esotropia and Exotropia, Oculomotor Nerve Paralysis, Optic Nerve Diseases such as Optic Atrophy which includes Hereditary Optic Atrophy, Optic Disk Drusen, Optic Neuritis such as Neuromyelitis Optica,

Papilledema, Trigeminal Neuralgia, Vocal Cord Paralysis; Demyelinating Diseases such as Neuromyelitis Optica and Swayback, and Diabetic neuropathies such as diabetic foot.

- [0676] Additional neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include nerve compression syndromes such as carpal tunnel syndrome, tarsal tunnel syndrome, thoracic outlet syndrome such as cervical rib syndrome, ulnar nerve compression syndrome, neuralgia such as causalgia, cervico-brachial neuralgia, facial neuralgia and trigeminal neuralgia, neuritis such as experimental allergic neuritis, optic neuritis, polyneuritis, polyradiculoneuritis and radiculities such as polyradiculitis, hereditary motor and sensory neuropathies such as Charcot-Marie Disease, Hereditary Optic Atrophy, Refsum's Disease, Hereditary Spastic Paraplegia and Werdnig-Hoffmann Disease, Hereditary Sensory and Autonomic Neuropathies which include Congenital Analgesia and Familial Dysautonomia, POEMS Syndrome, Sciatica, Gustatory Sweating and Tetany).

### **Endocrine Disorders**

- [0677] Polynucleotides or polypeptides, or agonists or antagonists of the present invention, may be used to treat, prevent, diagnose, and/or prognose disorders and/or diseases related to hormone imbalance, and/or disorders or diseases of the endocrine system.
- [0678] Hormones secreted by the glands of the endocrine system control physical growth, sexual function, metabolism, and other functions. Disorders may be classified in two ways: disturbances in the production of hormones, and the inability of tissues to respond to hormones. The etiology of these hormone imbalance or endocrine system diseases, disorders or conditions may be genetic, somatic, such as cancer and some autoimmune diseases, acquired (e.g., by chemotherapy, injury or toxins), or infectious. Moreover, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention can be used as a marker or detector of a particular disease or disorder related to the endocrine system and/or hormone imbalance.
- [0679] Endocrine system and/or hormone imbalance and/or diseases encompass disorders of uterine motility including, but not limited to: complications with pregnancy and labor (e.g., pre-term labor, post-term pregnancy, spontaneous abortion, and slow or



stopped labor); and disorders and/or diseases of the menstrual cycle (e.g., dysmenorrhea and endometriosis).

[0680] Endocrine system and/or hormone imbalance disorders and/or diseases include disorders and/or diseases of the pancreas, such as, for example, diabetes mellitus, diabetes insipidus, congenital pancreatic agenesis, pheochromocytoma--islet cell tumor syndrome; disorders and/or diseases of the adrenal glands such as, for example, Addison's Disease, corticosteroid deficiency, virilizing disease, hirsutism, Cushing's Syndrome, hyperaldosteronism, pheochromocytoma; disorders and/or diseases of the pituitary gland, such as, for example, hyperpituitarism, hypopituitarism, pituitary dwarfism, pituitary adenoma, panhypopituitarism, acromegaly, gigantism; disorders and/or diseases of the thyroid, including but not limited to, hyperthyroidism, hypothyroidism, Plummer's disease, Graves' disease (toxic diffuse goiter), toxic nodular goiter, thyroiditis (Hashimoto's thyroiditis, subacute granulomatous thyroiditis, and silent lymphocytic thyroiditis), Pendred's syndrome, myxedema, cretinism, thyrotoxicosis, thyroid hormone coupling defect, thymic aplasia, Hurthle cell tumours of the thyroid, thyroid cancer, thyroid carcinoma, Medullary thyroid carcinoma; disorders and/or diseases of the parathyroid, such as, for example, hyperparathyroidism, hypoparathyroidism; disorders and/or diseases of the hypothalamus.

[0681] In addition, endocrine system and/or hormone imbalance disorders and/or diseases may also include disorders and/or diseases of the testes or ovaries, including cancer. Other disorders and/or diseases of the testes or ovaries further include, for example, ovarian cancer, polycystic ovary syndrome, Klinefelter's syndrome, vanishing testes syndrome (bilateral anorchia), congenital absence of Leydig's cells, cryptorchidism, Noonan's syndrome, myotonic dystrophy, capillary haemangioma of the testis (benign), neoplasias of the testis and neo-testis.

[0682] Moreover, endocrine system and/or hormone imbalance disorders and/or diseases may also include disorders and/or diseases such as, for example, polyglandular deficiency syndromes, pheochromocytoma, neuroblastoma, multiple Endocrine neoplasia, and disorders and/or cancers of endocrine tissues.

[0683] In another embodiment, a polypeptide of the invention, or polynucleotides, antibodies, agonists, or antagonists corresponding to that polypeptide, may be used to diagnose, prognose, prevent, and/or treat endocrine diseases and/or disorders associated

with the tissue(s) in which the polypeptide of the invention is expressed, including one, two, three, four, five, or more tissues disclosed in Table 1A, column 7 (Tissue Distribution Library Code).

### **Gastrointestinal Disorders**

[0684] Polynucleotides or polypeptides, or agonists or antagonists of the present invention, may be used to treat, prevent, diagnose, and/or prognose gastrointestinal disorders, including inflammatory diseases and/or conditions, infections, cancers (e.g., intestinal neoplasms (carcinoid tumor of the small intestine, non-Hodgkin's lymphoma of the small intestine, small bowel lymphoma)), and ulcers, such as peptic ulcers.

[0685] Gastrointestinal disorders include dysphagia, odynophagia, inflammation of the esophagus, peptic esophagitis, gastric reflux, submucosal fibrosis and stricturing, Mallory-Weiss lesions, leiomyomas, lipomas, epidermal cancers, adeoncarcinomas, gastric retention disorders, gastroenteritis, gastric atrophy, gastric/stomach cancers, polyps of the stomach, autoimmune disorders such as pernicious anemia, pyloric stenosis, gastritis (bacterial, viral, eosinophilic, stress-induced, chronic erosive, atrophic, plasma cell, and Ménétrier's), and peritoneal diseases (e.g., chyloperitoneum, hemoperitoneum, mesenteric cyst, mesenteric lymphadenitis, mesenteric vascular occlusion, panniculitis, neoplasms, peritonitis, pneumoperitoneum, bubphrenic abscess).

[0686] Gastrointestinal disorders also include disorders associated with the small intestine, such as malabsorption syndromes, distension, irritable bowel syndrome, sugar intolerance, celiac disease, duodenal ulcers, duodenitis, tropical sprue, Whipple's disease, intestinal lymphangiectasia, Crohn's disease, appendicitis, obstructions of the ileum, Meckel's diverticulum, multiple diverticula, failure of complete rotation of the small and large intestine, lymphoma, and bacterial and parasitic diseases (such as Traveler's diarrhea, typhoid and paratyphoid, cholera, infection by Roundworms (*Ascaris lumbricoides*), Hookworms (*Ancylostoma duodenale*), Threadworms (*Enterobius vermicularis*), Tapeworms (*Taenia saginata*, *Echinococcus granulosus*, *Diphyllobothrium spp.*, and *T. solium*).

[0687] Liver diseases and/or disorders include intrahepatic cholestasis (alagille syndrome, biliary liver cirrhosis), fatty liver (alcoholic fatty liver, reye syndrome), hepatic vein thrombosis, hepatolenticular degeneration, hepatomegaly, hepatopulmonary

syndrome, hepatorenal syndrome, portal hypertension (esophageal and gastric varices), liver abscess (amebic liver abscess), liver cirrhosis (alcoholic, biliary and experimental), alcoholic liver diseases (fatty liver, hepatitis, cirrhosis), parasitic (hepatic echinococcosis, fascioliasis, amebic liver abscess), jaundice (hemolytic, hepatocellular, and cholestatic), cholestasis, portal hypertension, liver enlargement, ascites, hepatitis (alcoholic hepatitis, animal hepatitis, chronic hepatitis (autoimmune, hepatitis B, hepatitis C, hepatitis D, drug induced), toxic hepatitis, viral human hepatitis (hepatitis A, hepatitis B, hepatitis C, hepatitis D, hepatitis E), Wilson's disease, granulomatous hepatitis, secondary biliary cirrhosis, hepatic encephalopathy, portal hypertension, varices, hepatic encephalopathy, primary biliary cirrhosis, primary sclerosing cholangitis, hepatocellular adenoma, hemangiomas, bile stones, liver failure (hepatic encephalopathy, acute liver failure), and liver neoplasms (angiomyolipoma, calcified liver metastases, cystic liver metastases, epithelial tumors, fibrolamellar hepatocarcinoma, focal nodular hyperplasia, hepatic adenoma, hepatobiliary cystadenoma, hepatoblastoma, hepatocellular carcinoma, hepatoma, liver cancer, liver hemangioendothelioma, mesenchymal hamartoma, mesenchymal tumors of liver, nodular regenerative hyperplasia, benign liver tumors (Hepatic cysts [Simple cysts, Polycystic liver disease, Hepatobiliary cystadenoma, Choledochal cyst], Mesenchymal tumors [Mesenchymal hamartoma, Infantile hemangioendothelioma, Hemangioma, Peliosis hepatis, Lipomas, Inflammatory pseudotumor, Miscellaneous], Epithelial tumors [Bile duct epithelium (Bile duct hamartoma, Bile duct adenoma), Hepatocyte (Adenoma, Focal nodular hyperplasia, Nodular regenerative hyperplasia)], malignant liver tumors [hepatocellular, hepatoblastoma, hepatocellular carcinoma, cholangiocellular, cholangiocarcinoma, cystadenocarcinoma, tumors of blood vessels, angiosarcoma, Kaposi's sarcoma, hemangioendothelioma, other tumors, embryonal sarcoma, fibrosarcoma, leiomyosarcoma, rhabdomyosarcoma, carcinosarcoma, teratoma, carcinoid, squamous carcinoma, primary lymphoma]), peliosis hepatis, erythrohepatic porphyria, hepatic porphyria (acute intermittent porphyria, porphyria cutanea tarda), Zellweger syndrome).

**[0688]** Pancreatic diseases and/or disorders include acute pancreatitis, chronic pancreatitis (acute necrotizing pancreatitis, alcoholic pancreatitis), neoplasms (adenocarcinoma of the pancreas, cystadenocarcinoma, insulinoma, gastrinoma, and glucagonoma, cystic neoplasms, islet-cell tumors, pancreoblastoma), and other pancreatic

diseases (e.g., cystic fibrosis, cyst (pancreatic pseudocyst, pancreatic fistula, insufficiency)).

**[0689]** Gallbladder diseases include gallstones (cholelithiasis and choledocholithiasis), postcholecystectomy syndrome, diverticulosis of the gallbladder, acute cholecystitis, chronic cholecystitis, bile duct tumors, and mucocele.

**[0690]** Diseases and/or disorders of the large intestine include antibiotic-associated colitis, diverticulitis, ulcerative colitis, acquired megacolon, abscesses, fungal and bacterial infections, anorectal disorders (e.g., fissures, hemorrhoids), colonic diseases (colitis, colonic neoplasms [colon cancer, adenomatous colon polyps (e.g., villous adenoma), colon carcinoma, colorectal cancer], colonic diverticulitis, colonic diverticulosis, megacolon [Hirschsprung disease, toxic megacolon]; sigmoid diseases [proctocolitis, sigmoid neoplasms]), constipation, Crohn's disease, diarrhea (infantile diarrhea, dysentery), duodenal diseases (duodenal neoplasms, duodenal obstruction, duodenal ulcer, duodenitis), enteritis (enterocolitis), HIV enteropathy, ileal diseases (ileal neoplasms, ileitis), immunoproliferative small intestinal disease, inflammatory bowel disease (ulcerative colitis, Crohn's disease), intestinal atresia, parasitic diseases (anisakiasis, balantidiasis, blastocystis infections, cryptosporidiosis, dientamoebiasis, amebic dysentery, giardiasis), intestinal fistula (rectal fistula), intestinal neoplasms (cecal neoplasms, colonic neoplasms, duodenal neoplasms, ileal neoplasms, intestinal polyps, jejunal neoplasms, rectal neoplasms), intestinal obstruction (afferent loop syndrome, duodenal obstruction, impacted feces, intestinal pseudo-obstruction [cecal volvulus], intussusception), intestinal perforation, intestinal polyps (colonic polyps, gardner syndrome, peutz-jeghers syndrome), jejunal diseases (jejunal neoplasms), malabsorption syndromes (blind loop syndrome, celiac disease, lactose intolerance, short bowel syndrome, tropical sprue, whipple's disease), mesenteric vascular occlusion, pneumatosis cystoides intestinalis, protein-losing enteropathies (intestinal lymphangiectasis), rectal diseases (anus diseases, fecal incontinence, hemorrhoids, proctitis, rectal fistula, rectal prolapse, rectocele), peptic ulcer (duodenal ulcer, peptic esophagitis, hemorrhage, perforation, stomach ulcer, Zollinger-Ellison syndrome), postgastrectomy syndromes (dumping syndrome), stomach diseases (e.g., achlorhydria, duodenogastric reflux (bile reflux), gastric antral vascular ectasia, gastric fistula, gastric outlet obstruction, gastritis (atrophic or hypertrophic), gastroparesis, stomach dilatation, stomach diverticulum, stomach

neoplasms (gastric cancer, gastric polyps, gastric adenocarcinoma, hyperplastic gastric polyp), stomach rupture, stomach ulcer, stomach volvulus), tuberculosis, viscerotoposis, vomiting (e.g., hematemesis, hyperemesis gravidarum, postoperative nausea and vomiting) and hemorrhagic colitis.

[0691] Further diseases and/or disorders of the gastrointestinal system include biliary tract diseases, such as, gastroschisis, fistula (e.g., biliary fistula, esophageal fistula, gastric fistula, intestinal fistula, pancreatic fistula), neoplasms (e.g., biliary tract neoplasms, esophageal neoplasms, such as adenocarcinoma of the esophagus, esophageal squamous cell carcinoma, gastrointestinal neoplasms, pancreatic neoplasms, such as adenocarcinoma of the pancreas, mucinous cystic neoplasm of the pancreas, pancreatic cystic neoplasms, pancreatoblastoma, and peritoneal neoplasms), esophageal disease (e.g., bullous diseases, candidiasis, glycogenic acanthosis, ulceration, barrett esophagus varices, atresia, cyst, diverticulum (e.g., Zenker's diverticulum), fistula (e.g., tracheoesophageal fistula), motility disorders (e.g., CREST syndrome, deglutition disorders, achalasia, spasm, gastroesophageal reflux), neoplasms, perforation (e.g., Boerhaave syndrome, Mallory-Weiss syndrome), stenosis, esophagitis, diaphragmatic hernia (e.g., hiatal hernia); gastrointestinal diseases, such as, gastroenteritis (e.g., cholera morbus, norwalk virus infection), hemorrhage (e.g., hematemesis, melena, peptic ulcer hemorrhage), stomach neoplasms (gastric cancer, gastric polyps, gastric adenocarcinoma, stomach cancer)), hernia (e.g., congenital diaphragmatic hernia, femoral hernia, inguinal hernia, obturator hernia, umbilical hernia, ventral hernia), and intestinal diseases (e.g., cecal diseases (appendicitis, cecal neoplasms)).

### **Reproductive System Disorders**

[0692] The polynucleotides or polypeptides, or agonists or antagonists of the invention may be used for the diagnosis, treatment, or prevention of diseases and/or disorders of the reproductive system. Reproductive system disorders that can be treated by the compositions of the invention, include, but are not limited to, reproductive system injuries, infections, neoplastic disorders, congenital defects, and diseases or disorders which result in infertility, complications with pregnancy, labor, or parturition, and postpartum difficulties.

[0693] Reproductive system disorders and/or diseases include diseases and/or disorders of the testes, including, but not limited to, testicular atrophy, testicular feminization, cryptorchism (unilateral and bilateral), anorchia, ectopic testis, epididymitis and orchitis (typically resulting from infections such as, for example, gonorrhea, mumps, tuberculosis, and syphilis), testicular torsion, vasitis nodosa, germ cell tumors (e.g., seminomas, embryonal cell carcinomas, teratocarcinomas, choriocarcinomas, yolk sac tumors, and teratomas), stromal tumors (e.g., Leydig cell tumors), hydrocele, hematocele, varicocele, spermatocele, inguinal hernia, and disorders of sperm production (e.g., immotile cilia syndrome, aspermia, asthenozoospermia, azoospermia, oligospermia, and teratozoospermia).

[0694] Reproductive system disorders also include, but are not limited to, disorders of the prostate gland, such as acute non-bacterial prostatitis, chronic non-bacterial prostatitis, acute bacterial prostatitis, chronic bacterial prostatitis, prostatodystonia, prostatosis, granulomatous prostatitis, malacoplakia, benign prostatic hypertrophy or hyperplasia, and prostate neoplastic disorders, including adenocarcinomas, transitional cell carcinomas, ductal carcinomas, and squamous cell carcinomas.

[0695] Additionally, the compositions of the invention may be useful in the diagnosis, treatment, and/or prevention of disorders or diseases of the penis and urethra, including, but not limited to, inflammatory disorders, such as balanoposthitis, balanitis xerotica obliterans, phimosis, paraphimosis, syphilis, herpes simplex virus, gonorrhea, non-gonococcal urethritis, chlamydia, mycoplasma, trichomonas, HIV, AIDS, Reiter's syndrome, condyloma acuminatum, condyloma latum, and pearly penile papules; urethral abnormalities, such as hypospadias, epispadias, and phimosis; premalignant lesions, including Erythroplasia of Queyrat, Bowen's disease, Bowenoid papulosis, giant condyloma of Buscke-Lowenstein, and verrucous carcinoma; penile cancers, including squamous cell carcinomas, carcinoma in situ, verrucous carcinoma, and disseminated penile carcinoma; urethral neoplastic disorders, including penile urethral carcinoma, bulbomembranous urethral carcinoma, and prostatic urethral carcinoma; and erectile disorders, such as priapism, Peyronie's disease, erectile dysfunction, and impotence.

[0696] Moreover, diseases and/or disorders of the vas deferens include, but are not limited to, vasculitis and CBAVD (congenital bilateral absence of the vas deferens); additionally, the polynucleotides, polypeptides, and agonists or antagonists of the present

invention may be used in the diagnosis, treatment, and/or prevention of diseases and/or disorders of the seminal vesicles, including but not limited to, hydatid disease, congenital chloride diarrhea, and polycystic kidney disease.

[0697] Other disorders and/or diseases of the male reproductive system that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, Klinefelter's syndrome, Young's syndrome, premature ejaculation, diabetes mellitus, cystic fibrosis, Kartagener's syndrome, high fever, multiple sclerosis, and gynecomastia.

[0698] Further, the polynucleotides, polypeptides, and agonists or antagonists of the present invention may be used in the diagnosis, treatment, and/or prevention of diseases and/or disorders of the vagina and vulva, including, but not limited to, bacterial vaginosis, candida vaginitis, herpes simplex virus, chancroid, granuloma inguinale, lymphogranuloma venereum, scabies, human papillomavirus, vaginal trauma, vulvar trauma, adenosis, chlamydia vaginitis, gonorrhea, trichomonas vaginitis, condyloma acuminatum, syphilis, molluscum contagiosum, atrophic vaginitis, Paget's disease, lichen sclerosus, lichen planus, vulvodynia, toxic shock syndrome, vaginismus, vulvovaginitis, vulvar vestibulitis, and neoplastic disorders, such as squamous cell hyperplasia, clear cell carcinoma, basal cell carcinoma, melanomas, cancer of Bartholin's gland, and vulvar intraepithelial neoplasia.

[0699] Disorders and/or diseases of the uterus that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, dysmenorrhea, retroverted uterus, endometriosis, fibroids, adenomyosis, anovulatory bleeding, amenorrhea, Cushing's syndrome, hydatidiform moles, Asherman's syndrome, premature menopause, precocious puberty, uterine polyps, dysfunctional uterine bleeding (e.g., due to aberrant hormonal signals), and neoplastic disorders, such as adenocarcinomas, leiomyosarcomas, and sarcomas. Additionally, the polypeptides, polynucleotides, or agonists or antagonists of the invention may be useful as a marker or detector of, as well as in the diagnosis, treatment, and/or prevention of congenital uterine abnormalities, such as bicornuate uterus, septate uterus, simple unicornuate uterus, unicornuate uterus with a noncavitary rudimentary horn, unicornuate uterus with a non-communicating cavitary rudimentary horn, unicornuate uterus with a communicating cavitary horn, arcuate uterus, uterine didelphys, and T-shaped uterus.

[0700] Ovarian diseases and/or disorders that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, anovulation, polycystic ovary syndrome (Stein-Leventhal syndrome), ovarian cysts, ovarian hypofunction, ovarian insensitivity to gonadotropins, ovarian overproduction of androgens, right ovarian vein syndrome, amenorrhea, hirsutism, and ovarian cancer (including, but not limited to, primary and secondary cancerous growth, Sertoli-Leydig tumors, endometrioid carcinoma of the ovary, ovarian papillary serous adenocarcinoma, ovarian mucinous adenocarcinoma, and Ovarian Krukenberg tumors).

[0701] Cervical diseases and/or disorders that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, cervicitis, chronic cervicitis, mucopurulent cervicitis, cervical dysplasia, cervical polyps, Nabothian cysts, cervical erosion, cervical incompetence, and cervical neoplasms (including, for example, cervical carcinoma, squamous metaplasia, squamous cell carcinoma, adenosquamous cell neoplasia, and columnar cell neoplasia).

[0702] Additionally, diseases and/or disorders of the reproductive system that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, disorders and/or diseases of pregnancy, including miscarriage and stillbirth, such as early abortion, late abortion, spontaneous abortion, induced abortion, therapeutic abortion, threatened abortion, missed abortion, incomplete abortion, complete abortion, habitual abortion, missed abortion, and septic abortion; ectopic pregnancy, anemia, Rh incompatibility, vaginal bleeding during pregnancy, gestational diabetes, intrauterine growth retardation, polyhydramnios, HELLP syndrome, abruptio placentae, placenta previa, hyperemesis, preeclampsia, eclampsia, herpes gestationis, and urticaria of pregnancy. Additionally, the polynucleotides, polypeptides, and agonists or antagonists of the present invention may be used in the diagnosis, treatment, and/or prevention of diseases that can complicate pregnancy, including heart disease, heart failure, rheumatic heart disease, congenital heart disease, mitral valve prolapse, high blood pressure, anemia, kidney disease, infectious disease (e.g., rubella, cytomegalovirus, toxoplasmosis, infectious hepatitis, chlamydia, HIV, AIDS, and genital herpes), diabetes mellitus, Graves' disease, thyroiditis, hypothyroidism, Hashimoto's thyroiditis, chronic active hepatitis, cirrhosis of the liver, primary biliary cirrhosis, asthma, systemic lupus



eryematosiis, rheumatoid arthritis, myasthenia gravis, idiopathic thrombocytopenic purpura, appendicitis, ovarian cysts, gallbladder disorders, and obstruction of the intestine.

[0703] Complications associated with labor and parturition that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, premature rupture of the membranes, pre-term labor, post-term pregnancy, postmaturity, labor that progresses too slowly, fetal distress (e.g., abnormal heart rate (fetal or maternal), breathing problems, and abnormal fetal position), shoulder dystocia, prolapsed umbilical cord, amniotic fluid embolism, and aberrant uterine bleeding.

[0704] Further, diseases and/or disorders of the postdelivery period, that may be diagnosed, treated, and/or prevented with the compositions of the invention, include, but are not limited to, endometritis, myometritis, parametritis, peritonitis, pelvic thrombophlebitis, pulmonary embolism, endotoxemia, pyelonephritis, saphenous thrombophlebitis, mastitis, cystitis, postpartum hemorrhage, and inverted uterus.

[0705] Other disorders and/or diseases of the female reproductive system that may be diagnosed, treated, and/or prevented by the polynucleotides, polypeptides, and agonists or antagonists of the present invention include, but are not limited to, Turner's syndrome, pseudohermaphroditism, premenstrual syndrome, pelvic inflammatory disease, pelvic congestion (vascular engorgement), frigidity, anorgasmia, dyspareunia, ruptured fallopian tube, and Mittelschmerz.

#### **Developmental and Inherited Disorders**

[0706] Polynucleotides or polypeptides, or agonists or antagonists of the present invention may be used to treat, prevent, diagnose, and/or prognose diseases associated with mixed fetal tissues, including, but not limited to, developmental and inherited disorders or defects of the nervous system, musculoskeletal system, excretory system, cardiovascular system, hematopoietic system, gastrointestinal system, reproductive system, and respiratory system. Compositions of the present invention may also be used to treat, prevent, diagnose, and/or prognose developmental and inherited disorders or defects associated with, but not limited to, skin, hair, visual, and auditory tissues, metabolism. Additionally, the compositions of the invention may be useful in the diagnosis, treatment, and/or prevention of disorders or diseases associated with, but not limited to, chromosomal or genetic abnormalities and hyperproliferation or neoplasia.

[0707] Disorders or defects of the nervous system associated with developmental or inherited abnormalities that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, adrenoleukodystrophy, agenesis of corpus callosum, Alexander disease, anencephaly, Angelman syndrome, Arnold-Chiari deformity, Batten disease, Canavan disease, cephalic disorders, Charcot-Marie-Tooth disease, encephalocele, Friedreich's ataxia, Gaucher's disease, Gorlin syndrome, Hallervorden-Spatz disease, hereditary spastic paraplegia, Huntington disease, hydranencephaly, hydrocephalus, Joubert syndrome, Lesch-Nyhan syndrome, leukodystrophy, Menkes disease, microcephaly, Niemann-Pick Type C1, neurofibromatosis, porencephaly, progeria, proteus syndrome, Refsum disease, spina bifida, Sturge-Weber syndrome, Tay-Sachs disease, tuberous sclerosis, and von Hippel-Lindau disease.

[0708] Developmental and inherited disorders resulting in disorders or defects of the musculoskeletal system that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, achondroplasia, atlanto-occipital fusion, arthrogyriposis multiplex congenita, autosomal recessive muscular dystrophy, Becker's muscular dystrophy, cerebral palsy, choanal atresia, cleft lip, cleft palate, clubfoot, congenital amputation, congenital dislocation of the hip, congenital torticollis, congenital scoliosis, dopa-responsive dystonia, Duchenne muscular dystrophy, early-onset generalized dystonia, femoral torsion, Gorlin syndrome, hypophosphatasia, Klippel-Feil syndrome, knee dislocation, myoclonic dystonia, myotonic dystrophy, nail-patella syndrome, osteogenesis imperfecta, paroxysmal dystonia, progeria, prune-belly syndrome, rapid-onset dystonia parkinsonism, scoliosis, syndactyly, Treacher Collins' syndrome, velocardiofacial syndrome, and X-linked dystonia-parkinsonism.

[0709] Developmental or hereditary disorders or defects of the excretory system that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, Alport's syndrome, Bartter's syndrome, bladder diverticula, bladder exstrophy, cystinuria, epispadias, Fanconi's syndrome, Hartnup disease, horseshoe kidney, hypospadias, kidney agenesis, kidney ectopia, kidney malrotation, Liddle's syndrome, medullary cystic disease, medullary sponge, multicystic kidney, kidney polycystic kidney disease, nail-patella syndrome, Potter's syndrome, urinary tract flow obstruction, vitamin D-resistant rickets, and Wilm's tumor.

[0710] Cardiovascular disorders or defects of developmental or hereditary origin that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, aortic valve stenosis, atrial septal defects, atriocentric (A-V) canal defect, bicuspid aortic valve, coarctation of the aorta, dextrocardia, Ebstein's anomaly, Eisenmenger's complex, hypoplastic left heart syndrome, Marfan syndrome, patent ductus arteriosus, progeria, pulmonary atresia, pulmonary valve stenosis, subaortic stenosis, tetralogy of fallot, total anomalous pulmonary venous (P-V) connection, transposition of the great arteries, tricuspid atresia, truncus arteriosus, ventricular septal defects. Developmental or inherited disorders resulting in disorders involving the hematopoietic system that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but not limited to, Bernard-Soulier syndrome, Chédiak-Higashi syndrome, hemophilia, Hermansky-Pudlak syndrome, sickle cell anemia, storage pool disease, thromboxane A2 dysfunction, thrombasthenia, and von Willebrand's disease.

[0711] The compositions of the invention may also be used to diagnose, treat, and/or prevent developmental and inherited disorders resulting in disorders or defects of the gastrointestinal system, including, but not limited to, anal atresia, biliary atresia, esophageal atresia, diaphragmatic hernia, Hirschsprung's disease, Meckel's diverticulum, oligohydramnios, omphalocele, polyhydramnios, porphyria, situs inversus viscera. Developmental or inherited disorders resulting in metabolic disorders that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, alpha-1 antitrypsin deficiency, cystic fibrosis, hemochromatosis, lysosomal storage disease, phenylketonuria, Wilson's disease, and Zellweger syndrome.

[0712] Disorders of the reproductive system that are developmentally or hereditary related that may also be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, androgen insensitivity syndrome, ambiguous genitalia, autosomal sex reversal, congenital adrenal hyperplasia, gonadoblastoma, ovarian germ cell cancer, pseudohermaphroditism, true hermaphroditism, undescended testis, XX male syndrome, and XY female type gonadal dysgenesis. The compositions of the invention may also be used to diagnose, treat, and/or prevent developmental or inherited respiratory defects including, but not limited to, askin tumor, azygos lobe,

congenital diaphragmatic hernia, congenital lobar emphysema, cystic adenomatoid malformation, lobar emphysema, hyaline membrane disease, and pectus excavatum.

[0713] Developmental or inherited disorders may also result from chromosomal or genetic aberration that may be diagnosed, treated, and/or prevented with the compositions of the invention including, but not limited to, 4p- syndrome, cri du chat syndrome, Digeorge syndrome, Down's syndrome, Edward's syndrome, fragile X syndrome, Klinefelter's syndrome, Patau's syndrome, Prader-Willi syndrome, progeria, Turner's syndrome, triple X syndrome, and XYY syndrome. Other developmental disorders that can be diagnosed, treated, and/or prevented with the compositions of the invention, include, but are not limited to, fetal alcohol syndrome, and can be caused by environmental factors surrounding the developing fetus.

[0714] The compositions of the invention may further be able to be used to diagnose, treat, and/or prevent errors in development or a genetic disposition that may result in hyperproliferative disorders or neoplasms, including, but not limited to, acute childhood lymphoblastic leukemia, askin tumor, Beckwith-Wiedemann syndrome, childhood acute myeloid leukemia, childhood brain stem glioma, childhood cerebellar astrocytoma, childhood extracranial germ cell tumors childhood (primary), gonadoblastoma, hepatocellular cancer, childhood Hodgkin's disease, childhood Hodgkin's lymphoma, childhood hypothalamic and visual pathway glioma, childhood (primary) liver cancer, childhood lymphoblastic leukemia, childhood medulloblastoma, childhood non-Hodgkin's lymphoma, childhood pineal and supratentorial primitive neuroectodermal tumors, childhood primary liver cancer, childhood rhabdomyosarcoma, childhood soft tissue sarcoma, Gorlin syndrome, familial multiple endocrine neoplasia type I, neuroblastoma, ovarian germ cell cancer, pheochromocytoma, retinoblastoma, and Wilm's tumor.

[0715] Polypeptides may be administered using any method known in the art, including, but not limited to, direct needle injection at the delivery site, intravenous injection, topical administration, catheter infusion, biolistic injectors, particle accelerators, gelfoam sponge depots, other commercially available depot materials, osmotic pumps, oral or suppositorial solid pharmaceutical formulations, decanting or topical applications during surgery, aerosol delivery. Such methods are known in the art. Polypeptides may be administered as part of a Therapeutic, described in more detail below. Methods of delivering polynucleotides are described in more detail herein.

**Diseases at the Cellular Level**

[0716] Diseases associated with increased cell survival or the inhibition of apoptosis that could be treated, prevented, diagnosed and/or prognosed using polynucleotides or polypeptides, as well as antagonists or agonists of the present invention, include cancers (such as follicular lymphomas, carcinomas with p53 mutations, and hormone-dependent tumors, including, but not limited to colon cancer, cardiac tumors, pancreatic cancer, melanoma, retinoblastoma, glioblastoma, lung cancer, intestinal cancer, testicular cancer, stomach cancer, neuroblastoma, myxoma, myoma, lymphoma, endothelioma, osteoblastoma, osteoclastoma, osteosarcoma, chondrosarcoma, adenoma, breast cancer, prostate cancer, Kaposi's sarcoma and ovarian cancer); autoimmune disorders (such as, multiple sclerosis, Sjogren's syndrome, Hashimoto's thyroiditis, biliary cirrhosis, Behcet's disease, Crohn's disease, polymyositis, systemic lupus erythematosus and immune-related glomerulonephritis and rheumatoid arthritis) and viral infections (such as herpes viruses, pox viruses and adenoviruses), inflammation, graft v. host disease, acute graft rejection, and chronic graft rejection.

[0717] In preferred embodiments, polynucleotides, polypeptides, and/or antagonists of the invention are used to inhibit growth, progression, and/or metastasis of cancers, in particular those [listed above] involving hematopoietic and immune system tissues.

[0718] Additional diseases or conditions associated with increased cell survival that could be treated or detected by polynucleotides or polypeptides, or agonists or antagonists of the present invention include, but are not limited to, progression, and/or metastases of malignancies and related disorders such as leukemia (including acute leukemias (e.g., acute lymphocytic leukemia, acute myelocytic leukemia (including myeloblastic, promyelocytic, myelomonocytic, monocytic, and erythroleukemia)) and chronic leukemias (e.g., chronic myelocytic (granulocytic) leukemia and chronic lymphocytic leukemia)), polycythemia vera, lymphomas (e.g., Hodgkin's disease and non-Hodgkin's disease), multiple myeloma, Waldenstrom's macroglobulinemia, heavy chain disease, and solid tumors including, but not limited to, sarcomas and carcinomas such as fibrosarcoma, myxosarcoma, liposarcoma, chondrosarcoma, osteogenic sarcoma, chordoma, angiosarcoma, endotheliosarcoma, lymphangiosarcoma, lymphangioendotheliosarcoma, synovioma, mesothelioma, Ewing's tumor, leiomyosarcoma, rhabdomyosarcoma, colon

carcinoma, pancreatic cancer, breast cancer, ovarian cancer, prostate cancer, squamous cell carcinoma, basal cell carcinoma, adenocarcinoma, sweat gland carcinoma, sebaceous gland carcinoma, papillary carcinoma, papillary adenocarcinomas, cystadenocarcinoma, medullary carcinoma, bronchogenic carcinoma, renal cell carcinoma, hepatoma, bile duct carcinoma, choriocarcinoma, seminoma, embryonal carcinoma, Wilm's tumor, cervical cancer, testicular tumor, lung carcinoma, small cell lung carcinoma, bladder carcinoma, epithelial carcinoma, glioma, astrocytoma, medulloblastoma, craniopharyngioma, ependymoma, pinealoma, hemangioblastoma, acoustic neuroma, oligodendroglioma, menangioma, melanoma, neuroblastoma, and retinoblastoma.

[0719] Diseases associated with increased apoptosis that could be treated, prevented, diagnosed, and/or prognosed using polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, include, but are not limited to, AIDS; neurodegenerative disorders (such as Alzheimer's disease, Parkinson's disease, Amyotrophic lateral sclerosis, Retinitis pigmentosa, Cerebellar degeneration and brain tumor or prior associated disease); autoimmune disorders (such as, multiple sclerosis, Sjogren's syndrome, Hashimoto's thyroiditis, biliary cirrhosis, Behcet's disease, Crohn's disease, polymyositis, systemic lupus erythematosus and immune-related glomerulonephritis and rheumatoid arthritis) myelodysplastic syndromes (such as aplastic anemia), graft v. host disease, ischemic injury (such as that caused by myocardial infarction, stroke and reperfusion injury), liver injury (e.g., hepatitis related liver injury, ischemia/reperfusion injury, cholestasis (bile duct injury) and liver cancer); toxin-induced liver disease (such as that caused by alcohol), septic shock, cachexia and anorexia.

#### **Wound Healing and Epithelial Cell Proliferation**

[0720] In accordance with yet a further aspect of the present invention, there is provided a process for utilizing polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, for therapeutic purposes, for example, to stimulate epithelial cell proliferation and basal keratinocytes for the purpose of wound healing, and to stimulate hair follicle production and healing of dermal wounds. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, may be clinically useful in stimulating wound healing including surgical wounds, excisional wounds, deep wounds involving damage of the dermis and epidermis, eye tissue wounds, dental tissue

wounds, oral cavity wounds, diabetic ulcers, dermal ulcers, cubitus ulcers, arterial ulcers, venous stasis ulcers, burns resulting from heat exposure or chemicals, and other abnormal wound healing conditions such as uremia, malnutrition, vitamin deficiencies and complications associated with systemic treatment with steroids, radiation therapy and antineoplastic drugs and antimetabolites. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to promote dermal reestablishment subsequent to dermal loss.

[0721] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to increase the adherence of skin grafts to a wound bed and to stimulate re-epithelialization from the wound bed. The following are types of grafts that polynucleotides or polypeptides, agonists or antagonists of the present invention, could be used to increase adherence to a wound bed: autografts, artificial skin, allografts, autodermic graft, autoepidermic grafts, avacular grafts, Blair-Brown grafts, bone graft, brephoplastic grafts, cutis graft, delayed graft, dermic graft, epidermic graft, fascia graft, full thickness graft, heterologous graft, xenograft, homologous graft, hyperplastic graft, lamellar graft, mesh graft, mucosal graft, Ollier-Thiersch graft, omental graft, patch graft, pedicle graft, penetrating graft, split skin graft, thick split graft. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, can be used to promote skin strength and to improve the appearance of aged skin.

[0722] It is believed that polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, will also produce changes in hepatocyte proliferation, and epithelial cell proliferation in the lung, breast, pancreas, stomach, small intestine, and large intestine. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could promote proliferation of epithelial cells such as sebocytes, hair follicles, hepatocytes, type II pneumocytes, mucin-producing goblet cells, and other epithelial cells and their progenitors contained within the skin, lung, liver, and gastrointestinal tract. Polynucleotides or polypeptides, agonists or antagonists of the present invention, may promote proliferation of endothelial cells, keratinocytes, and basal keratinocytes.

[0723] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could also be used to reduce the side effects of gut toxicity that result from radiation, chemotherapy treatments or viral infections. Polynucleotides or

polypeptides, as well as agonists or antagonists of the present invention, may have a cytoprotective effect on the small intestine mucosa. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, may also stimulate healing of mucositis (mouth ulcers) that result from chemotherapy and viral infections.

[0724] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could further be used in full regeneration of skin in full and partial thickness skin defects, including burns, (i.e., repopulation of hair follicles, sweat glands, and sebaceous glands), treatment of other skin defects such as psoriasis. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to treat epidermolysis bullosa, a defect in adherence of the epidermis to the underlying dermis which results in frequent, open and painful blisters by accelerating reepithelialization of these lesions. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could also be used to treat gastric and duodenal ulcers and help heal by scar formation of the mucosal lining and regeneration of glandular mucosa and duodenal mucosal lining more rapidly. Inflammatory bowel diseases, such as Crohn's disease and ulcerative colitis, are diseases, which result in destruction of the mucosal surface of the small or large intestine, respectively. Thus, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to promote the resurfacing of the mucosal surface to aid more rapid healing and to prevent progression of inflammatory bowel disease. Treatment with polynucleotides or polypeptides, agonists or antagonists of the present invention, is expected to have a significant effect on the production of mucus throughout the gastrointestinal tract and could be used to protect the intestinal mucosa from injurious substances that are ingested or following surgery. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to treat diseases associated with the under expression.

[0725] Moreover, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to prevent and heal damage to the lungs due to various pathological states. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could stimulate proliferation and differentiation and promote the repair of alveoli and bronchiolar epithelium to prevent or treat acute or chronic lung damage. For example, emphysema, which results in the progressive loss of alveoli,



and inhalation injuries, i.e., resulting from smoke inhalation and burns, that cause necrosis of the bronchiolar epithelium and alveoli could be effectively treated using polynucleotides or polypeptides, agonists or antagonists of the present invention. Also, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to stimulate the proliferation of and differentiation of type II pneumocytes, which may help treat or prevent disease such as hyaline membrane diseases, such as infant respiratory distress syndrome and bronchopulmonary dysplasia, in premature infants.

[0726] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could stimulate the proliferation and differentiation of hepatocytes and, thus, could be used to alleviate or treat liver diseases and pathologies such as fulminant liver failure caused by cirrhosis, liver damage caused by viral hepatitis and toxic substances (i.e., acetaminophen, carbon tetrachloride and other hepatotoxins known in the art).

[0727] In addition, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to treat or prevent the onset of diabetes mellitus. In patients with newly diagnosed Types I and II diabetes, where some islet cell function remains, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to maintain the islet function so as to alleviate, delay or prevent permanent manifestation of the disease. Also, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used as an auxiliary in islet cell transplantation to improve or promote islet cell function.

### **Infectious Disease**

[0728] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention can be used to treat or detect infectious agents. For example, by increasing the immune response, particularly increasing the proliferation and differentiation of B and/or T cells, infectious diseases may be treated. The immune response may be increased by either enhancing an existing immune response, or by initiating a new immune response. Alternatively, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may also directly inhibit the infectious agent, without necessarily eliciting an immune response.

[0729] Viruses are one example of an infectious agent that can cause disease or symptoms that can be treated or detected by a polynucleotide or polypeptide and/or agonist or antagonist of the present invention. Examples of viruses, include, but are not limited to Examples of viruses, include, but are not limited to the following DNA and RNA viruses and viral families: Arbovirus, Adenoviridae, Arenaviridae, Arterivirus, Bimaviridae, Bunyaviridae, Caliciviridae, Circoviridae, Coronaviridae, Dengue, EBV, HIV, Flaviviridae, Hepadnaviridae (Hepatitis), Herpesviridae (such as, Cytomegalovirus, Herpes Simplex, Herpes Zoster), Mononegavirus (e.g., Paramyxoviridae, Morbillivirus, Rhabdoviridae), Orthomyxoviridae (e.g., Influenza A, Influenza B, and parainfluenza), Papilloma virus, Papovaviridae, Parvoviridae, Picornaviridae, Poxviridae (such as Smallpox or Vaccinia), Reoviridae (e.g., Rotavirus), Retroviridae (HTLV-I, HTLV-II, Lentivirus), and Togaviridae (e.g., Rubivirus). Viruses falling within these families can cause a variety of diseases or symptoms, including, but not limited to: arthritis, bronchiolitis, respiratory syncytial virus, encephalitis, eye infections (e.g., conjunctivitis, keratitis), chronic fatigue syndrome, hepatitis (A, B, C, E, Chronic Active, Delta), Japanese B encephalitis, Junin, Chikungunya, Rift Valley fever, yellow fever, meningitis, opportunistic infections (e.g., AIDS), pneumonia, Burkitt's Lymphoma, chickenpox, hemorrhagic fever, Measles, Mumps, Parainfluenza, Rabies, the common cold, Polio, leukemia, Rubella, sexually transmitted diseases, skin diseases (e.g., Kaposi's, warts), and viremia. polynucleotides or polypeptides, or agonists or antagonists of the invention, can be used to treat or detect any of these symptoms or diseases. In specific embodiments, polynucleotides, polypeptides, or agonists or antagonists of the invention are used to treat: meningitis, Dengue, EBV, and/or hepatitis (e.g., hepatitis B). In an additional specific embodiment polynucleotides, polypeptides, or agonists or antagonists of the invention are used to treat patients nonresponsive to one or more other commercially available hepatitis vaccines. In a further specific embodiment polynucleotides, polypeptides, or agonists or antagonists of the invention are used to treat AIDS.

[0730] Similarly, bacterial and fungal agents that can cause disease or symptoms and that can be treated or detected by a polynucleotide or polypeptide and/or agonist or antagonist of the present invention include, but not limited to, the following Gram-Negative and Gram-positive bacteria, bacterial families, and fungi: Actinomyces (e.g., Norcardia), Acinetobacter, *Cryptococcus neoformans*, Aspergillus, Bacillaceae (e.g.,

*Bacillus anthracis*), *Bacteroides* (e.g., *Bacteroides fragilis*), Blastomycosis, *Bordetella*, *Borrelia* (e.g., *Borrelia burgdorferi*), *Brucella*, *Candidia*, *Campylobacter*, *Chlamydia*, *Clostridium* (e.g., *Clostridium botulinum*, *Clostridium difficile*, *Clostridium perfringens*, *Clostridium tetani*), *Coccidioides*, *Corynebacterium* (e.g., *Corynebacterium diphtheriae*), *Cryptococcus*, *Dermatocycoses*, *E. coli* (e.g., Enterotoxigenic *E. coli* and Enterohemorrhagic *E. coli*), *Enterobacter* (e.g. *Enterobacter aerogenes*), *Enterobacteriaceae* (*Klebsiella*, *Salmonella* (e.g., *Salmonella typhi*, *Salmonella enteritidis*, *Salmonella typhi*), *Serratia*, *Yersinia*, *Shigella*), *Erysipelothrix*, *Haemophilus* (e.g., *Haemophilus influenza* type B), *Helicobacter*, *Legionella* (e.g., *Legionella pneumophila*), *Leptospira*, *Listeria* (e.g., *Listeria monocytogenes*), *Mycoplasma*, *Mycobacterium* (e.g., *Mycobacterium leprae* and *Mycobacterium tuberculosis*), *Vibrio* (e.g., *Vibrio cholerae*), *Neisseriaceae* (e.g., *Neisseria gonorrhea*, *Neisseria meningitidis*), *Pasteurellaceae*, *Proteus*, *Pseudomonas* (e.g., *Pseudomonas aeruginosa*), *Rickettsiaceae*, *Spirochetes* (e.g., *Treponema* spp., *Leptospira* spp., *Borrelia* spp.), *Shigella* spp., *Staphylococcus* (e.g., *Staphylococcus aureus*), *Meningioccocus*, *Pneumococcus* and *Streptococcus* (e.g., *Streptococcus pneumoniae* and Groups A, B, and C *Streptococci*), and *Ureaplasmas*. These bacterial, parasitic, and fungal families can cause diseases or symptoms, including, but not limited to: antibiotic-resistant infections, bacteremia, endocarditis, septicemia, eye infections (e.g., conjunctivitis), uveitis, tuberculosis, gingivitis, bacterial diarrhea, opportunistic infections (e.g., AIDS related infections), paronychia, prosthesis-related infections, dental caries, Reiter's Disease, respiratory tract infections, such as Whooping Cough or Empyema, sepsis, Lyme Disease, Cat-Scratch Disease, dysentery, paratyphoid fever, food poisoning, *Legionella* disease, chronic and acute inflammation, erythema, yeast infections, typhoid, pneumonia, gonorrhea, meningitis (e.g., meningitis types A and B), chlamydia, syphilis, diphtheria, leprosy, brucellosis, peptic ulcers, anthrax, spontaneous abortions, birth defects, pneumonia, lung infections, ear infections, deafness, blindness, lethargy, malaise, vomiting, chronic diarrhea, Crohn's disease, colitis, vaginosis, sterility, pelvic inflammatory diseases, candidiasis, paratuberculosis, tuberculosis, lupus, botulism, gangrene, tetanus, impetigo, Rheumatic Fever, Scarlet Fever, sexually transmitted diseases, skin diseases (e.g., cellulitis, dermatocycoses), toxemia, urinary tract infections, wound infections, nosocomial infections. Polynucleotides or polypeptides, agonists or antagonists of the invention, can be used to treat or detect any

of these symptoms or diseases. In specific embodiments, polynucleotides, polypeptides, agonists or antagonists of the invention are used to treat: tetanus, diphtheria, botulism, and/or meningitis type B.

[0731] Moreover, parasitic agents causing disease or symptoms that can be treated, prevented, and/or diagnosed by a polynucleotide or polypeptide and/or agonist or antagonist of the present invention include, but not limited to, the following families or class: Amebiasis, Babesiosis, Coccidiosis, Cryptosporidiosis, Dientamoebiasis, Dourine, Ectoparasitic, Giardiasis, Helminthiasis, Leishmaniasis, Schistosoma, Theileriasis, Toxoplasmosis, Trypanosomiasis, and Trichomonas and Sporozoans (e.g., *Plasmodium virax*, *Plasmodium falciparum*, *Plasmodium malariae* and *Plasmodium ovale*). These parasites can cause a variety of diseases or symptoms, including, but not limited to: Scabies, Trombiculiasis, eye infections, intestinal disease (e.g., dysentery, giardiasis), liver disease, lung disease, opportunistic infections (e.g., AIDS related), malaria, pregnancy complications, and toxoplasmosis. polynucleotides or polypeptides, or agonists or antagonists of the invention, can be used to treat, prevent, and/or diagnose any of these symptoms or diseases. In specific embodiments, polynucleotides, polypeptides, or agonists or antagonists of the invention are used to treat, prevent, and/or diagnose malaria.

[0732] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention of the present invention could either be by administering an effective amount of a polypeptide to the patient, or by removing cells from the patient, supplying the cells with a polynucleotide of the present invention, and returning the engineered cells to the patient (ex vivo therapy). Moreover, the polypeptide or polynucleotide of the present invention can be used as an antigen in a vaccine to raise an immune response against infectious disease.

### **Regeneration**

[0733] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention can be used to differentiate, proliferate, and attract cells, leading to the regeneration of tissues. (See, Science 276:59-87 (1997).) The regeneration of tissues could be used to repair, replace, or protect tissue damaged by congenital defects, trauma (wounds, burns, incisions, or ulcers), age, disease (e.g. osteoporosis, osteoarthritis,

periodontal disease, liver failure), surgery, including cosmetic plastic surgery, fibrosis, reperfusion injury, or systemic cytokine damage.

[0734] Tissues that could be regenerated using the present invention include organs (e.g., pancreas, liver, intestine, kidney, skin, endothelium), muscle (smooth, skeletal or cardiac), vasculature (including vascular and lymphatics), nervous, hematopoietic, and skeletal (bone, cartilage, tendon, and ligament) tissue. Preferably, regeneration occurs without or decreased scarring. Regeneration also may include angiogenesis.

[0735] Moreover, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, may increase regeneration of tissues difficult to heal. For example, increased tendon/ligament regeneration would quicken recovery time after damage. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention could also be used prophylactically in an effort to avoid damage. Specific diseases that could be treated include of tendinitis, carpal tunnel syndrome, and other tendon or ligament defects. A further example of tissue regeneration of non-healing wounds includes pressure ulcers, ulcers associated with vascular insufficiency, surgical, and traumatic wounds.

[0736] Similarly, nerve and brain tissue could also be regenerated by using polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, to proliferate and differentiate nerve cells. Diseases that could be treated using this method include central and peripheral nervous system diseases, neuropathies, or mechanical and traumatic disorders (e.g., spinal cord disorders, head trauma, cerebrovascular disease, and stroke). Specifically, diseases associated with peripheral nerve injuries, peripheral neuropathy (e.g., resulting from chemotherapy or other medical therapies), localized neuropathies, and central nervous system diseases (e.g., Alzheimer's disease, Parkinson's disease, Huntington's disease, amyotrophic lateral sclerosis, and Shy-Drager syndrome), could all be treated using the polynucleotides or polypeptides, as well as agonists or antagonists of the present invention.

### Chemotaxis

[0737] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may have chemotaxis activity. A chemotactic molecule attracts or mobilizes cells (e.g., monocytes, fibroblasts, neutrophils, T-cells, mast cells, eosinophils,

epithelial and/or endothelial cells) to a particular site in the body, such as inflammation, infection, or site of hyperproliferation. The mobilized cells can then fight off and/or heal the particular trauma or abnormality.

[0738] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may increase chemotactic activity of particular cells. These chemotactic molecules can then be used to treat inflammation, infection, hyperproliferative disorders, or any immune system disorder by increasing the number of cells targeted to a particular location in the body. For example, chemotactic molecules can be used to treat wounds and other trauma to tissues by attracting immune cells to the injured location. Chemotactic molecules of the present invention can also attract fibroblasts, which can be used to treat wounds.

[0739] It is also contemplated that polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may inhibit chemotactic activity. These molecules could also be used to treat disorders. Thus, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention could be used as an inhibitor of chemotaxis.

#### **Binding Activity**

[0740] A polypeptide of the present invention may be used to screen for molecules that bind to the polypeptide or for molecules to which the polypeptide binds. The binding of the polypeptide and the molecule may activate (agonist), increase, inhibit (antagonist), or decrease activity of the polypeptide or the molecule bound. Examples of such molecules include antibodies, oligonucleotides, proteins (e.g., receptors), or small molecules.

[0741] Preferably, the molecule is closely related to the natural ligand of the polypeptide, e.g., a fragment of the ligand, or a natural substrate, a ligand, a structural or functional mimetic. (See, Coligan et al., Current Protocols in Immunology 1(2):Chapter 5 (1991).) Similarly, the molecule can be closely related to the natural receptor to which the polypeptide binds, or at least, a fragment of the receptor capable of being bound by the polypeptide (e.g., active site). In either case, the molecule can be rationally designed using known techniques.

- [0742] Preferably, the screening for these molecules involves producing appropriate cells which express the polypeptide. Preferred cells include cells from mammals, yeast, *Drosophila*, or *E. coli*. Cells expressing the polypeptide (or cell membrane containing the expressed polypeptide) are then preferably contacted with a test compound potentially containing the molecule to observe binding, stimulation, or inhibition of activity of either the polypeptide or the molecule.
- [0743] The assay may simply test binding of a candidate compound to the polypeptide, wherein binding is detected by a label, or in an assay involving competition with a labeled competitor. Further, the assay may test whether the candidate compound results in a signal generated by binding to the polypeptide.
- [0744] Alternatively, the assay can be carried out using cell-free preparations, polypeptide/molecule affixed to a solid support, chemical libraries, or natural product mixtures. The assay may also simply comprise the steps of mixing a candidate compound with a solution containing a polypeptide, measuring polypeptide/molecule activity or binding, and comparing the polypeptide/molecule activity or binding to a standard.
- [0745] Preferably, an ELISA assay can measure polypeptide level or activity in a sample (e.g., biological sample) using a monoclonal or polyclonal antibody. The antibody can measure polypeptide level or activity by either binding, directly or indirectly, to the polypeptide or by competing with the polypeptide for a substrate.
- [0746] Additionally, the receptor to which the polypeptide of the present invention binds can be identified by numerous methods known to those of skill in the art, for example, ligand panning and FACS sorting (Coligan, et al., *Current Protocols in Immun.*, 1(2), Chapter 5, (1991)). For example, expression cloning is employed wherein polyadenylated RNA is prepared from a cell responsive to the polypeptides, for example, NIH3T3 cells which are known to contain multiple receptors for the FGF family proteins, and SC-3 cells, and a cDNA library created from this RNA is divided into pools and used to transfect COS cells or other cells that are not responsive to the polypeptides. Transfected cells which are grown on glass slides are exposed to the polypeptide of the present invention, after they have been labeled. The polypeptides can be labeled by a variety of means including iodination or inclusion of a recognition site for a site-specific protein kinase.

[0747] Following fixation and incubation, the slides are subjected to auto-radiographic analysis. Positive pools are identified and sub-pools are prepared and re-transfected using an iterative sub-pooling and re-screening process, eventually yielding a single clones that encodes the putative receptor.

[0748] As an alternative approach for receptor identification, the labeled polypeptides can be photoaffinity linked with cell membrane or extract preparations that express the receptor molecule. Cross-linked material is resolved by PAGE analysis and exposed to X-ray film. The labeled complex containing the receptors of the polypeptides can be excised, resolved into peptide fragments, and subjected to protein microsequencing. The amino acid sequence obtained from microsequencing would be used to design a set of degenerate oligonucleotide probes to screen a cDNA library to identify the genes encoding the putative receptors.

[0749] Moreover, the techniques of gene-shuffling, motif-shuffling, exon-shuffling, and/or codon-shuffling (collectively referred to as "DNA shuffling") may be employed to modulate the activities of the polypeptide of the present invention thereby effectively generating agonists and antagonists of the polypeptide of the present invention. *See generally*, U.S. Patent Nos. 5,605,793, 5,811,238, 5,830,721, 5,834,252, and 5,837,458, and Patten, P. A., et al., *Curr. Opinion Biotechnol.* 8:724-33 (1997); Harayama, S. *Trends Biotechnol.* 16(2):76-82 (1998); Hansson L. O., et al., *J. Mol. Biol.* 287:265-76 (1999); and Lorenzo, M. M. and Blasco, R. *Biotechniques* 24(2):308-13 (1998); each of these patents and publications are hereby incorporated by reference). In one embodiment, alteration of polynucleotides and corresponding polypeptides may be achieved by DNA shuffling. DNA shuffling involves the assembly of two or more DNA segments into a desired molecule by homologous, or site-specific, recombination. In another embodiment, polynucleotides and corresponding polypeptides may be altered by being subjected to random mutagenesis by error-prone PCR, random nucleotide insertion or other methods prior to recombination. In another embodiment, one or more components, motifs, sections, parts, domains, fragments, etc., of the polypeptide of the present invention may be recombined with one or more components, motifs, sections, parts, domains, fragments, etc. of one or more heterologous molecules. In preferred embodiments, the heterologous molecules are family members. In further preferred embodiments, the heterologous molecule is a growth factor such as, for example, platelet-derived growth factor (PDGF),



insulin-like growth factor (IGF-I), transforming growth factor (TGF)-alpha, epidermal growth factor (EGF), fibroblast growth factor (FGF), TGF-beta, bone morphogenetic protein (BMP)-2, BMP-4, BMP-5, BMP-6, BMP-7, activins A and B, decapentaplegic(dpp), 60A, OP-2, dorsalin, growth differentiation factors (GDFs), nodal, MIS, inhibin-alpha, TGF-beta1, TGF-beta2, TGF-beta3, TGF-beta5, and glial-derived neurotrophic factor (GDNF).

[0750] Other preferred fragments are biologically active fragments of the polypeptide of the present invention. Biologically active fragments are those exhibiting activity similar, but not necessarily identical, to an activity of the polypeptide of the present invention. The biological activity of the fragments may include an improved desired activity, or a decreased undesirable activity.

[0751] Additionally, this invention provides a method of screening compounds to identify those which modulate the action of the polypeptide of the present invention. An example of such an assay comprises combining a mammalian fibroblast cell, the polypeptide of the present invention, the compound to be screened and  $^3\text{[H]}$  thymidine under cell culture conditions where the fibroblast cell would normally proliferate. A control assay may be performed in the absence of the compound to be screened and compared to the amount of fibroblast proliferation in the presence of the compound to determine if the compound stimulates proliferation by determining the uptake of  $^3\text{[H]}$  thymidine in each case. The amount of fibroblast cell proliferation is measured by liquid scintillation chromatography which measures the incorporation of  $^3\text{[H]}$  thymidine. Both agonist and antagonist compounds may be identified by this procedure.

[0752] In another method, a mammalian cell or membrane preparation expressing a receptor for a polypeptide of the present invention is incubated with a labeled polypeptide of the present invention in the presence of the compound. The ability of the compound to enhance or block this interaction could then be measured. Alternatively, the response of a known second messenger system following interaction of a compound to be screened and the receptor is measured and the ability of the compound to bind to the receptor and elicit a second messenger response is measured to determine if the compound is a potential agonist or antagonist. Such second messenger systems include but are not limited to, cAMP guanylate cyclase, ion channels or phosphoinositide hydrolysis.

[0753] All of these above assays can be used as diagnostic or prognostic markers. The molecules discovered using these assays can be used to treat disease or to bring about a particular result in a patient (e.g., blood vessel growth) by activating or inhibiting the polypeptide/molecule. Moreover, the assays can discover agents which may inhibit or enhance the production of the polypeptides of the invention from suitably manipulated cells or tissues.

[0754] Therefore, the invention includes a method of identifying compounds which bind to a polypeptide of the invention comprising the steps of: (a) incubating a candidate binding compound with a polypeptide of the present invention; and (b) determining if binding has occurred. Moreover, the invention includes a method of identifying agonists/antagonists comprising the steps of: (a) incubating a candidate compound with a polypeptide of the present invention, (b) assaying a biological activity, and (b) determining if a biological activity of the polypeptide has been altered.

#### **Targeted Delivery**

[0755] In another embodiment, the invention provides a method of delivering compositions to targeted cells expressing a receptor for a polypeptide of the invention, or cells expressing a cell bound form of a polypeptide of the invention.

[0756] As discussed herein, polypeptides or antibodies of the invention may be associated with heterologous polypeptides, heterologous nucleic acids, toxins, or prodrugs via hydrophobic, hydrophilic, ionic and/or covalent interactions. In one embodiment, the invention provides a method for the specific delivery of compositions of the invention to cells by administering polypeptides of the invention (including antibodies) that are associated with heterologous polypeptides or nucleic acids. In one example, the invention provides a method for delivering a therapeutic protein into the targeted cell. In another example, the invention provides a method for delivering a single stranded nucleic acid (e.g., antisense or ribozymes) or double stranded nucleic acid (e.g., DNA that can integrate into the cell's genome or replicate episomally and that can be transcribed) into the targeted cell.

[0757] In another embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of

the invention (e.g., polypeptides of the invention or antibodies of the invention) in association with toxins or cytotoxic prodrugs.

[0758] By "toxin" is meant compounds that bind and activate endogenous cytotoxic effector systems, radioisotopes, holotoxins, modified toxins, catalytic subunits of toxins, or any molecules or enzymes not normally present in or on the surface of a cell that under defined conditions cause the cell's death. Toxins that may be used according to the methods of the invention include, but are not limited to, radioisotopes known in the art, compounds such as, for example, antibodies (or complement fixing containing portions thereof) that bind an inherent or induced endogenous cytotoxic effector system, thymidine kinase, endonuclease, RNase, alpha toxin, ricin, abrin, *Pseudomonas* exotoxin A, diphtheria toxin, saporin, momordin, gelonin, pokeweed antiviral protein, alpha-sarcin and cholera toxin. By "cytotoxic prodrug" is meant a non-toxic compound that is converted by an enzyme, normally present in the cell, into a cytotoxic compound. Cytotoxic prodrugs that may be used according to the methods of the invention include, but are not limited to, glutamyl derivatives of benzoic acid mustard alkylating agent, phosphate derivatives of etoposide or mitomycin C, cytosine arabinoside, daunorubicin, and phenoxyacetamide derivatives of doxorubicin.

### **Drug Screening**

[0759] Further contemplated is the use of the polypeptides of the present invention, or the polynucleotides encoding these polypeptides, to screen for molecules which modify the activities of the polypeptides of the present invention. Such a method would include contacting the polypeptide of the present invention with a selected compound(s) suspected of having antagonist or agonist activity, and assaying the activity of these polypeptides following binding.

[0760] This invention is particularly useful for screening therapeutic compounds by using the polypeptides of the present invention, or binding fragments thereof, in any of a variety of drug screening techniques. The polypeptide or fragment employed in such a test may be affixed to a solid support, expressed on a cell surface, free in solution, or located intracellularly. One method of drug screening utilizes eukaryotic or prokaryotic host cells which are stably transformed with recombinant nucleic acids expressing the polypeptide or fragment. Drugs are screened against such transformed cells in competitive binding

assays. One may measure, for example, the formulation of complexes between the agent being tested and a polypeptide of the present invention.

[0761] Thus, the present invention provides methods of screening for drugs or any other agents which affect activities mediated by the polypeptides of the present invention. These methods comprise contacting such an agent with a polypeptide of the present invention or a fragment thereof and assaying for the presence of a complex between the agent and the polypeptide or a fragment thereof, by methods well known in the art. In such a competitive binding assay, the agents to screen are typically labeled. Following incubation, free agent is separated from that present in bound form, and the amount of free or uncomplexed label is a measure of the ability of a particular agent to bind to the polypeptides of the present invention.

[0762] Another technique for drug screening provides high throughput screening for compounds having suitable binding affinity to the polypeptides of the present invention, and is described in great detail in European Patent Application 84/03564, published on September 13, 1984, which is incorporated herein by reference herein. Briefly stated, large numbers of different small peptide test compounds are synthesized on a solid substrate, such as plastic pins or some other surface. The peptide test compounds are reacted with polypeptides of the present invention and washed. Bound polypeptides are then detected by methods well known in the art. Purified polypeptides are coated directly onto plates for use in the aforementioned drug screening techniques. In addition, non-neutralizing antibodies may be used to capture the peptide and immobilize it on the solid support.

[0763] This invention also contemplates the use of competitive drug screening assays in which neutralizing antibodies capable of binding polypeptides of the present invention specifically compete with a test compound for binding to the polypeptides or fragments thereof. In this manner, the antibodies are used to detect the presence of any peptide which shares one or more antigenic epitopes with a polypeptide of the invention.

#### **Antisense And Ribozyme (Antagonists)**

[0764] In specific embodiments, antagonists according to the present invention are nucleic acids corresponding to the sequences contained in SEQ ID NO:X, or the complementary strand thereof, and/or to cDNA sequences contained in cDNA Clone ID NO:Z identified for example, in Table 1A. In one embodiment, antisense sequence is

generated internally, by the organism, in another embodiment, the antisense sequence is separately administered (see, for example, O'Connor, J., *Neurochem.* 56:560 (1991). *Oligodeoxynucleotides as Antisense Inhibitors of Gene Expression*, CRC Press, Boca Raton, FL (1988). Antisense technology can be used to control gene expression through antisense DNA or RNA, or through triple-helix formation. Antisense techniques are discussed for example, in Okano, J., *Neurochem.* 56:560 (1991); *Oligodeoxynucleotides as Antisense Inhibitors of Gene Expression*, CRC Press, Boca Raton, FL (1988). Triple helix formation is discussed in, for instance, Lee et al., *Nucleic Acids Research* 6:3073 (1979); Cooney et al., *Science* 241:456 (1988); and Dervan et al., *Science* 251:1300 (1991). The methods are based on binding of a polynucleotide to a complementary DNA or RNA.

[0765] For example, the use of c-myc and c-myb antisense RNA constructs to inhibit the growth of the non-lymphocytic leukemia cell line HL-60 and other cell lines was previously described. (Wickstrom et al. (1988); Anfossi et al. (1989)). These experiments were performed *in vitro* by incubating cells with the oligoribonucleotide. A similar procedure for *in vivo* use is described in WO 91/15580. Briefly, a pair of oligonucleotides for a given antisense RNA is produced as follows: A sequence complimentary to the first 15 bases of the open reading frame is flanked by an EcoRI site on the 5' end and a HindIII site on the 3' end. Next, the pair of oligonucleotides is heated at 90°C for one minute and then annealed in 2X ligation buffer (20mM TRIS HCl pH 7.5, 10mM MgCl<sub>2</sub>, 10mM dithiothreitol (DTT) and 0.2 mM ATP) and then ligated to the EcoRI/Hind III site of the retroviral vector PMV7 (WO 91/15580).

[0766] For example, the 5' coding portion of a polynucleotide that encodes the polypeptide of the present invention may be used to design an antisense RNA oligonucleotide of from about 10 to 40 base pairs in length. A DNA oligonucleotide is designed to be complementary to a region of the gene involved in transcription thereby preventing transcription and the production of the receptor. The antisense RNA oligonucleotide hybridizes to the mRNA *in vivo* and blocks translation of the mRNA molecule into receptor polypeptide.

[0767] In one embodiment, the antisense nucleic acid of the invention is produced intracellularly by transcription from an exogenous sequence. For example, a vector or a portion thereof, is transcribed, producing an antisense nucleic acid (RNA) of the

invention. Such a vector would contain a sequence encoding the antisense nucleic acid. Such a vector can remain episomal or become chromosomally integrated, as long as it can be transcribed to produce the desired antisense RNA. Such vectors can be constructed by recombinant DNA technology methods standard in the art. Vectors can be plasmid, viral, or others known in the art, used for replication and expression in vertebrate cells. Expression of the sequence encoding the polypeptide of the present invention or fragments thereof, can be by any promoter known in the art to act in vertebrate, preferably human cells. Such promoters can be inducible or constitutive. Such promoters include, but are not limited to, the SV40 early promoter region (Bernoist and Chambon, *Nature* 29:304-310 (1981)), the promoter contained in the 3' long terminal repeat of Rous sarcoma virus (Yamamoto et al., *Cell* 22:787-797 (1980)), the herpes thymidine promoter (Wagner et al., *Proc. Natl. Acad. Sci. U.S.A.* 78:1441-1445 (1981)), the regulatory sequences of the metallothionein gene (Brinster, et al., *Nature* 296:39-42 (1982)), etc.

[0768] The antisense nucleic acids of the invention comprise a sequence complementary to at least a portion of an RNA transcript of a gene of the present invention. However, absolute complementarity, although preferred, is not required. A sequence "complementary to at least a portion of an RNA," referred to herein, means a sequence having sufficient complementarity to be able to hybridize with the RNA, forming a stable duplex; in the case of double stranded antisense nucleic acids, a single strand of the duplex DNA may thus be tested, or triplex formation may be assayed. The ability to hybridize will depend on both the degree of complementarity and the length of the antisense nucleic acid. Generally, the larger the hybridizing nucleic acid, the more base mismatches with a RNA it may contain and still form a stable duplex (or triplex as the case may be). One skilled in the art can ascertain a tolerable degree of mismatch by use of standard procedures to determine the melting point of the hybridized complex.

[0769] Oligonucleotides that are complementary to the 5' end of the message, e.g., the 5' untranslated sequence up to and including the AUG initiation codon, should work most efficiently at inhibiting translation. However, sequences complementary to the 3' untranslated sequences of mRNAs have been shown to be effective at inhibiting translation of mRNAs as well. See generally, Wagner, R., 1994, *Nature* 372:333-335. Thus, oligonucleotides complementary to either the 5'- or 3'- non-translated, non-coding regions of polynucleotide sequences described herein could be used in an antisense

approach to inhibit translation of endogenous mRNA. Oligonucleotides complementary to the 5' untranslated region of the mRNA should include the complement of the AUG start codon. Antisense oligonucleotides complementary to mRNA coding regions are less efficient inhibitors of translation but could be used in accordance with the invention. Whether designed to hybridize to the 5', 3' or coding region of mRNA of the present invention, antisense nucleic acids should be at least six nucleotides in length, and are preferably oligonucleotides ranging from 6 to about 50 nucleotides in length. In specific aspects the oligonucleotide is at least 10 nucleotides, at least 17 nucleotides, at least 25 nucleotides or at least 50 nucleotides.

[0770] The polynucleotides of the invention can be DNA or RNA or chimeric mixtures or derivatives or modified versions thereof, single-stranded or double-stranded. The oligonucleotide can be modified at the base moiety, sugar moiety, or phosphate backbone, for example, to improve stability of the molecule, hybridization, etc. The oligonucleotide may include other appended groups such as peptides (e.g., for targeting host cell receptors *in vivo*), or agents facilitating transport across the cell membrane (see, e.g., Letsinger et al., 1989, Proc. Natl. Acad. Sci. U.S.A. 86:6553-6556; Lemaitre et al., 1987, Proc. Natl. Acad. Sci. 84:648-652; PCT Publication No. WO88/09810, published December 15, 1988) or the blood-brain barrier (see, e.g., PCT Publication No. WO89/10134, published April 25, 1988), hybridization-triggered cleavage agents. (See, e.g., Krol et al., 1988, BioTechniques 6:958-976) or intercalating agents. (See, e.g., Zon, 1988, Pharm. Res. 5:539-549). To this end, the oligonucleotide may be conjugated to another molecule, e.g., a peptide, hybridization triggered cross-linking agent, transport agent, hybridization-triggered cleavage agent, etc.

[0771] The antisense oligonucleotide may comprise at least one modified base moiety which is selected from the group including, but not limited to, 5-fluorouracil, 5-bromouracil, 5-chlorouracil, 5-iodouracil, hypoxanthine, xantine, 4-acetylcytosine, 5-(carboxyhydroxymethyl) uracil, 5-carboxymethylaminomethyl-2-thiouridine, 5-carboxymethylaminomethyluracil, dihydrouracil, beta-D-galactosylqueosine, inosine, N6-isopentenyladenine, 1-methylguanine, 1-methylinosine, 2,2-dimethylguanine, 2-methyladenine, 2-methylguanine, 3-methylcytosine, 5-methylcytosine, N6-adenine, 7-methylguanine, 5-methylaminomethyluracil, 5-methoxyaminomethyl-2-thiouracil, beta-D-mannosylqueosine, 5'-methoxycarboxymethyluracil, 5-methoxyuracil,

2-methylthio-N6-isopentenyladenine, uracil-5-oxyacetic acid (v), wybutoxosine, pseudouracil, queosine, 2-thiocytosine, 5-methyl-2-thiouracil, 2-thiouracil, 4-thiouracil, 5-methyluracil, uracil-5-oxyacetic acid methylester, uracil-5-oxyacetic acid (v), 5-methyl-2-thiouracil, 3-(3-amino-3-N-2-carboxypropyl) uracil, (acp3)w, and 2,6-diaminopurine.

[0772] The antisense oligonucleotide may also comprise at least one modified sugar moiety selected from the group including, but not limited to, arabinose, 2-fluoroarabinose, xylulose, and hexose.

[0773] In yet another embodiment, the antisense oligonucleotide comprises at least one modified phosphate backbone selected from the group including, but not limited to, a phosphorothioate, a phosphorodithioate, a phosphoramidothioate, a phosphoramidate, a phosphordiamidate, a methylphosphonate, an alkyl phosphotriester, and a formacetal or analog thereof.

[0774] In yet another embodiment, the antisense oligonucleotide is an a-anomeric oligonucleotide. An a-anomeric oligonucleotide forms specific double-stranded hybrids with complementary RNA in which, contrary to the usual b-units, the strands run parallel to each other (Gautier et al., 1987, Nucl. Acids Res. 15:6625-6641). The oligonucleotide is a 2'-O-methylribonucleotide (Inoue et al., 1987, Nucl. Acids Res. 15:6131-6148), or a chimeric RNA-DNA analogue (Inoue et al., 1987, FEBS Lett. 215:327-330).

[0775] Polynucleotides of the invention may be synthesized by standard methods known in the art, e.g. by use of an automated DNA synthesizer (such as are commercially available from Biosearch, Applied Biosystems, etc.). As examples, phosphorothioate oligonucleotides may be synthesized by the method of Stein et al. (1988, Nucl. Acids Res. 16:3209), methylphosphonate oligonucleotides can be prepared by use of controlled pore glass polymer supports (Sarin et al., 1988, Proc. Natl. Acad. Sci. U.S.A. 85:7448-7451), etc.

[0776] While antisense nucleotides complementary to the coding region sequence could be used, those complementary to the transcribed untranslated region are most preferred.

[0777] Potential antagonists according to the invention also include catalytic RNA, or a ribozyme (See, e.g., PCT International Publication WO 90/11364, published October 4, 1990; Sarver et al, Science 247:1222-1225 (1990). While ribozymes that cleave mRNA at site specific recognition sequences can be used to destroy mRNAs, the use of hammerhead



ribozymes is preferred. Hammerhead ribozymes cleave mRNAs at locations dictated by flanking regions that form complementary base pairs with the target mRNA. The sole requirement is that the target mRNA have the following sequence of two bases: 5'-UG-3'. The construction and production of hammerhead ribozymes is well known in the art and is described more fully in Haseloff and Gerlach, Nature 334:585-591 (1988). There are numerous potential hammerhead ribozyme cleavage sites within the nucleotide sequence of SEQ ID NO:X. Preferably, the ribozyme is engineered so that the cleavage recognition site is located near the 5' end of the mRNA; i.e., to increase efficiency and minimize the intracellular accumulation of non-functional mRNA transcripts.

[0778] As in the antisense approach, the ribozymes of the invention can be composed of modified oligonucleotides (e.g. for improved stability, targeting, etc.) and should be delivered to cells which express *in vivo*. DNA constructs encoding the ribozyme may be introduced into the cell in the same manner as described above for the introduction of antisense encoding DNA. A preferred method of delivery involves using a DNA construct "encoding" the ribozyme under the control of a strong constitutive promoter, such as, for example, pol III or pol II promoter, so that transfected cells will produce sufficient quantities of the ribozyme to destroy endogenous messages and inhibit translation. Since ribozymes unlike antisense molecules, are catalytic, a lower intracellular concentration is required for efficiency.

[0779] Antagonist/agonist compounds may be employed to inhibit the cell growth and proliferation effects of the polypeptides of the present invention on neoplastic cells and tissues, i.e. stimulation of angiogenesis of tumors, and, therefore, retard or prevent abnormal cellular growth and proliferation, for example, in tumor formation or growth.

[0780] The antagonist/agonist may also be employed to prevent hyper-vascular diseases, and prevent the proliferation of epithelial lens cells after extracapsular cataract surgery. Prevention of the mitogenic activity of the polypeptides of the present invention may also be desirous in cases such as restenosis after balloon angioplasty.

[0781] The antagonist/agonist may also be employed to prevent the growth of scar tissue during wound healing.

[0782] The antagonist/agonist may also be employed to treat the diseases described herein.

[0783] Thus, the invention provides a method of treating disorders or diseases, including but not limited to the disorders or diseases listed throughout this application, associated with overexpression of a polynucleotide of the present invention by administering to a patient (a) an antisense molecule directed to the polynucleotide of the present invention, and/or (b) a ribozyme directed to the polynucleotide of the present invention.

#### **Binding Peptides and Other Molecules**

[0784] The invention also encompasses screening methods for identifying polypeptides and nonpolypeptides that bind immune/hematopoietic antigen polypeptides, and the immune/hematopoietic antigen binding molecules identified thereby. These binding molecules are useful, for example, as agonists and antagonists of the immune/hematopoietic antigen polypeptides. Such agonists and antagonists can be used, in accordance with the invention, in the therapeutic embodiments described in detail, below.

[0785] This method comprises the steps of:

- (a) contacting immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides with a plurality of molecules; and
- (b) identifying a molecule that binds the immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides.

[0786] The step of contacting the immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides with the plurality of molecules may be effected in a number of ways. For example, one may contemplate immobilizing the immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides on a solid support and bringing a solution of the plurality of molecules in contact with the immobilized immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides. Such a procedure would be akin to an affinity chromatographic process, with the affinity matrix being comprised of the immobilized immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides. The molecules having a selective affinity for the immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides can then be purified by affinity selection. The nature of the solid support,

process for attachment of the immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides to the solid support, solvent, and conditions of the affinity isolation or selection are largely conventional and well known to those of ordinary skill in the art.

[0787] Alternatively, one may also separate a plurality of polypeptides into substantially separate fractions comprising a subset of or individual polypeptides. For instance, one can separate the plurality of polypeptides by gel electrophoresis, column chromatography, or like method known to those of ordinary skill for the separation of polypeptides. The individual polypeptides can also be produced by a transformed host cell in such a way as to be expressed on or about its outer surface (e.g., a recombinant phage). Individual isolates can then be "probed" by the immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides, optionally in the presence of an inducer should one be required for expression, to determine if any selective affinity interaction takes place between the immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides and the individual clone. Prior to contacting the immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides with each fraction comprising individual polypeptides, the polypeptides could first be transferred to a solid support for additional convenience. Such a solid support may simply be a piece of filter membrane, such as one made of nitrocellulose or nylon. In this manner, positive clones could be identified from a collection of transformed host cells of an expression library, which harbor a DNA construct encoding a polypeptide having a selective affinity for immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides. Furthermore, the amino acid sequence of the polypeptide having a selective affinity for the immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides can be determined directly by conventional means or the coding sequence of the DNA encoding the polypeptide can frequently be determined more conveniently. The primary sequence can then be deduced from the corresponding DNA sequence. If the amino acid sequence is to be determined from the polypeptide itself, one may use microsequencing techniques. The sequencing technique may include mass spectroscopy.

[0788] In certain situations, it may be desirable to wash away any unbound immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like

polypeptides, or alternatively, unbound polypeptides, from a mixture of the immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides and the plurality of polypeptides prior to attempting to determine or to detect the presence of a selective affinity interaction. Such a wash step may be particularly desirable when the immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides or the plurality of polypeptides is bound to a solid support.

[0789] The plurality of molecules provided according to this method may be provided by way of diversity libraries, such as random or combinatorial peptide or nonpeptide libraries which can be screened for molecules that specifically bind immune/hematopoietic antigen polypeptides. Many libraries are known in the art that can be used, e.g., chemically synthesized libraries, recombinant (e.g., phage display libraries), and *in vitro* translation-based libraries. Examples of chemically synthesized libraries are described in Fodor et al., 1991, Science 251:767-773; Houghten et al., 1991, Nature 354:84-86; Lam et al., 1991, Nature 354:82-84; Medynski, 1994, Bio/Technology 12:709-710; Gallop et al., 1994, J. Medicinal Chemistry 37(9):1233-1251; Ohlmeyer et al., 1993, Proc. Natl. Acad. Sci. USA 90:10922-10926; Erb et al., 1994, Proc. Natl. Acad. Sci. USA 91:11422-11426; Houghten et al., 1992, Biotechniques 13:412; Jayawickreme et al., 1994, Proc. Natl. Acad. Sci. USA 91:1614-1618; Salmon et al., 1993, Proc. Natl. Acad. Sci. USA 90:11708-11712; PCT Publication No. WO 93/20242; and Brenner and Lerner, 1992, Proc. Natl. Acad. Sci. USA 89:5381-5383.

[0790] Examples of phage display libraries are described in Scott and Smith, 1990, Science 249:386-390; Devlin et al., 1990, Science, 249:404-406; Christian, R. B., et al., 1992, J. Mol. Biol. 227:711-718; Lenstra, 1992, J. Immunol. Meth. 152:149-157; Kay et al., 1993, Gene 128:59-65; and PCT Publication No. WO 94/18318 dated Aug. 18, 1994.

[0791] *In vitro* translation-based libraries include but are not limited to those described in PCT Publication No. WO 91/05058 dated Apr. 18, 1991; and Mattheakis et al., 1994, Proc. Natl. Acad. Sci. USA 91:9022-9026.

[0792] By way of examples of nonpeptide libraries, a benzodiazepine library (see e.g., Bunin et al., 1994, Proc. Natl. Acad. Sci. USA 91:4708-4712) can be adapted for use. Peptoid libraries (Simon et al., 1992, Proc. Natl. Acad. Sci. USA 89:9367-9371) can also be used. Another example of a library that can be used, in which the amide functionalities in peptides have been permethylated to generate a chemically transformed combinatorial

library, is described by Ostresh et al. (1994, Proc. Natl. Acad. Sci. USA 91:11138-11142).

[0793] The variety of non-peptide libraries that are useful in the present invention is great. For example, Ecker and Crooke, 1995, *Bio/Technology* 13:351-360 list benzodiazepines, hydantoins, piperazinediones, biphenyls, sugar analogs, beta-mercaptoketones, arylacetic acids, acylpiperidines, benzopyrans, cubanes, xanthines, aminimides, and oxazolones as among the chemical species that form the basis of various libraries.

[0794] Non-peptide libraries can be classified broadly into two types: decorated monomers and oligomers. Decorated monomer libraries employ a relatively simple scaffold structure upon which a variety functional groups is added. Often the scaffold will be a molecule with a known useful pharmacological activity. For example, the scaffold might be the benzodiazepine structure.

[0795] Non-peptide oligomer libraries utilize a large number of monomers that are assembled together in ways that create new shapes that depend on the order of the monomers. Among the monomer units that have been used are carbamates, pyrrolinones, and morpholinos. Peptoids, peptide-like oligomers in which the side chain is attached to the alpha amino group rather than the alpha carbon, form the basis of another version of non-peptide oligomer libraries. The first non-peptide oligomer libraries utilized a single type of monomer and thus contained a repeating backbone. Recent libraries have utilized more than one monomer, giving the libraries added flexibility.

[0796] Screening the libraries can be accomplished by any of a variety of commonly known methods. See, e.g., the following references, which disclose screening of peptide libraries: Parmley and Smith, 1989, *Adv. Exp. Med. Biol.* 251:215-218; Scott and Smith, 1990, *Science* 249:386-390; Fowlkes et al., 1992; *BioTechniques* 13:422-427; Oldenburg et al., 1992, *Proc. Natl. Acad. Sci. USA* 89:5393-5397; Yu et al., 1994, *Cell* 76:933-945; Staudt et al., 1988, *Science* 241:577-580; Bock et al., 1992, *Nature* 355:564-566; Tuerk et al., 1992, *Proc. Natl. Acad. Sci. USA* 89:6988-6992; Ellington et al., 1992, *Nature* 355:850-852; U.S. Pat. No. 5,096,815, U.S. Pat. No. 5,223,409, and U.S. Pat. No. 5,198,346, all to Ladner et al.; Rebar and Pabo, 1993, *Science* 263:671-673; and CT Publication No. WO 94/18318.

[0797] In a specific embodiment, screening to identify a molecule that binds immune/hematopoietic antigen polypeptides can be carried out by contacting the library

members with an immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides immobilized on a solid phase and harvesting those library members that bind to the immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides. Examples of such screening methods, termed "panning" techniques are described by way of example in Parmley and Smith, 1988, *Gene* 73:305-318; Fowlkes et al., 1992, *BioTechniques* 13:422-427; International Publication No. WO 94/18318; and in references cited herein.

[0798] In another embodiment, the two-hybrid system for selecting interacting proteins in yeast (Fields and Song, 1989, *Nature* 340:245-246; Chien et al., 1991, *Proc. Natl. Acad. Sci. USA* 88:9578-9582) can be used to identify molecules that specifically bind to immune/hematopoietic antigen polypeptides or immune/hematopoietic antigen-like polypeptides.

[0799] Where the immune/hematopoietic antigen binding molecule is a polypeptide, the polypeptide can be conveniently selected from any peptide library, including random peptide libraries, combinatorial peptide libraries, or biased peptide libraries. The term "biased" is used herein to mean that the method of generating the library is manipulated so as to restrict one or more parameters that govern the diversity of the resulting collection of molecules, in this case peptides.

[0800] Thus, a truly random peptide library would generate a collection of peptides in which the probability of finding a particular amino acid at a given position of the peptide is the same for all 20 amino acids. A bias can be introduced into the library, however, by specifying, for example, that a lysine occur every fifth amino acid or that positions 4, 8, and 9 of a decapeptide library be fixed to include only arginine. Clearly, many types of biases can be contemplated, and the present invention is not restricted to any particular bias. Furthermore, the present invention contemplates specific types of peptide libraries, such as phage displayed peptide libraries and those that utilize a DNA construct comprising a lambda phage vector with a DNA insert.

[0801] As mentioned above, in the case of an immune/hematopoietic antigen binding molecule that is a polypeptide, the polypeptide may have about 6 to less than about 60 amino acid residues, preferably about 6 to about 10 amino acid residues, and most preferably, about 6 to about 22 amino acids. In another embodiment, an immune/hematopoietic antigen binding polypeptide has in the range of 15-100 amino

acids, or 20-50 amino acids.

[0802] The selected immune/hematopoietic antigen binding polypeptide can be obtained by chemical synthesis or recombinant expression.

### **Other Activities**

[0803] A polypeptide, polynucleotide, agonist, or antagonist of the present invention, as a result of the ability to stimulate vascular endothelial cell growth, may be employed in treatment for stimulating re-vascularization of ischemic tissues due to various disease conditions such as thrombosis, arteriosclerosis, and other cardiovascular conditions. The polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed to stimulate angiogenesis and limb regeneration, as discussed above.

[0804] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed for treating wounds due to injuries, burns, post-operative tissue repair, and ulcers since they are mitogenic to various cells of different origins, such as fibroblast cells and skeletal muscle cells, and therefore, facilitate the repair or replacement of damaged or diseased tissue.

[0805] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed to stimulate neuronal growth and to treat and prevent neuronal damage which occurs in certain neuronal disorders or neuro-degenerative conditions such as Alzheimer's disease, Parkinson's disease, and AIDS-related complex. A polypeptide, polynucleotide, agonist, or antagonist of the present invention may have the ability to stimulate chondrocyte growth, therefore, they may be employed to enhance bone and periodontal regeneration and aid in tissue transplants or bone grafts.

[0806] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may be also be employed to prevent skin aging due to sunburn by stimulating keratinocyte growth.

[0807] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed for preventing hair loss, since FGF family members activate hair-forming cells and promotes melanocyte growth. Along the same lines, a polypeptide, polynucleotide, agonist, or antagonist of the present invention may be employed to stimulate growth and differentiation of hematopoietic cells and bone marrow cells when used in combination with other cytokines.

- [0808] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed to maintain organs before transplantation or for supporting cell culture of primary tissues. A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed for inducing tissue of mesodermal origin to differentiate in early embryos.
- [0809] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also increase or decrease the differentiation or proliferation of embryonic stem cells, besides, as discussed above, hematopoietic lineage.
- [0810] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be used to modulate mammalian characteristics, such as body height, weight, hair color, eye color, skin, percentage of adipose tissue, pigmentation, size, and shape (e.g., cosmetic surgery). Similarly, a polypeptide, polynucleotide, agonist, or antagonist of the present invention may be used to modulate mammalian metabolism affecting catabolism, anabolism, processing, utilization, and storage of energy.
- [0811] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may be used to change a mammal's mental state or physical state by influencing biorhythms, cardiac rhythms, depression (including depressive disorders), tendency for violence, tolerance for pain, reproductive capabilities (preferably by Activin or Inhibin-like activity), hormonal or endocrine levels, appetite, libido, memory, stress, or other cognitive qualities.
- [0812] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be used as a food additive or preservative, such as to increase or decrease storage capabilities, fat content, lipid, protein, carbohydrate, vitamins, minerals, cofactors or other nutritional components.
- [0813] The above-recited applications have uses in a wide variety of hosts. Such hosts include, but are not limited to, human, murine, rabbit, goat, guinea pig, camel, horse, mouse, rat, hamster, pig, micro-pig, chicken, goat, cow, sheep, dog, cat, non-human primate, and human. In specific embodiments, the host is a mouse, rabbit, goat, guinea pig, chicken, rat, hamster, pig, sheep, dog or cat. In preferred embodiments, the host is a mammal. In most preferred embodiments, the host is a human.

#### **Other Preferred Embodiments**



- [0814] Other preferred embodiments of the claimed invention include an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 50 contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, the nucleotide sequence as defined in column 4 of Table 1A or columns 8 and 9 of Table 2 or the complementary strand thereto, and/or cDNA contained in Clone ID NO:Z.
- [0815] Also preferred is a nucleic acid molecule wherein said sequence of contiguous nucleotides is included in the nucleotide sequence of the portion of SEQ ID NO:X as defined in column 4, "ORF (From-To)", in Table 1A.
- [0816] Also preferred is a nucleic acid molecule wherein said sequence of contiguous nucleotides is included in the nucleotide sequence of the portion of SEQ ID NO:X as defined in columns 8 and 9, "NT From" and "NT To" respectively, in Table 2.
- [0817] Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 150 contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, the nucleotide sequence as defined in column 4 of Table 1A or columns 8 and 9 of Table 2 or the complementary strand thereto, and/or cDNA contained in Clone ID NO:Z.
- [0818] Further preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 500 contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, the nucleotide sequence as defined in column 4 of Table 1A or columns 8 and 9 of Table 2 or the complementary strand thereto, and/or cDNA contained in Clone ID NO:Z.
- [0819] A further preferred embodiment is a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the nucleotide sequence of the portion of SEQ ID NO:X defined in column 4, "ORF (From-To)", in Table 1A.
- [0820] A further preferred embodiment is a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the nucleotide sequence of the portion of SEQ ID NO:X defined in columns 8 and 9, "NT From" and "NT To", respectively, in Table 2.
- [0821] A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the complete nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, the nucleotide

sequence as defined in column 4 of Table 1A or columns 8 and 9 of Table 2 or the complementary strand thereto, and/or cDNA contained in Clone ID NO:Z.

[0822] Also preferred is an isolated nucleic acid molecule which hybridizes under stringent hybridization conditions to a nucleic acid molecule comprising a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, the nucleotide sequence as defined in column 4 of Table 1A or columns 8 and 9 of Table 2 or the complementary strand thereto, and/or cDNA contained in Clone ID NO:Z, wherein said nucleic acid molecule which hybridizes does not hybridize under stringent hybridization conditions to a nucleic acid molecule having a nucleotide sequence consisting of only A residues or of only T residues.

[0823] Also preferred is a composition of matter comprising a DNA molecule which comprises the cDNA contained in Clone ID NO:Z.

[0824] Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least 50 contiguous nucleotides of the cDNA sequence contained in Clone ID NO:Z.

[0825] Also preferred is an isolated nucleic acid molecule, wherein said sequence of at least 50 contiguous nucleotides is included in the nucleotide sequence of an open reading frame sequence encoded by cDNA contained in Clone ID NO:Z.

[0826] Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to sequence of at least 150 contiguous nucleotides in the nucleotide sequence encoded by cDNA contained in Clone ID NO:Z.

[0827] A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to sequence of at least 500 contiguous nucleotides in the nucleotide sequence encoded by cDNA contained in Clone ID NO:Z.

[0828] A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the complete nucleotide sequence encoded by cDNA contained in Clone ID NO:Z.

[0829] A further preferred embodiment is a method for detecting in a biological sample a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary

strand thereto; the nucleotide sequence as defined in column 4 of Table 1A or columns 8 and 9 of Table 2 or the complementary strand thereto; and a nucleotide sequence encoded by cDNA contained in Clone ID NO:Z; which method comprises a step of comparing a nucleotide sequence of at least one nucleic acid molecule in said sample with a sequence selected from said group and determining whether the sequence of said nucleic acid molecule in said sample is at least 95% identical to said selected sequence.

[0830] Also preferred is the above method wherein said step of comparing sequences comprises determining the extent of nucleic acid hybridization between nucleic acid molecules in said sample and a nucleic acid molecule comprising said sequence selected from said group. Similarly, also preferred is the above method wherein said step of comparing sequences is performed by comparing the nucleotide sequence determined from a nucleic acid molecule in said sample with said sequence selected from said group. The nucleic acid molecules can comprise DNA molecules or RNA molecules.

[0831] A further preferred embodiment is a method for identifying the species, tissue or cell type of a biological sample which method comprises a step of detecting nucleic acid molecules in said sample, if any, comprising a nucleotide sequence that is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; the nucleotide sequence as defined in column 4 of Table 1A or columns 8 and 9 of Table 2 or the complementary strand thereto; and a nucleotide sequence of the cDNA contained in Clone ID NO:Z.

[0832] The method for identifying the species, tissue or cell type of a biological sample can comprise a step of detecting nucleic acid molecules comprising a nucleotide sequence in a panel of at least two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from said group.

[0833] Also preferred is a method for diagnosing in a subject a pathological condition associated with abnormal structure or expression of a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; the nucleotide sequence as defined in column 4 of Table 1A or columns 8 and 9 of Table 2 or the complementary strand thereto; or the cDNA contained in Clone ID NO:Z which encodes a protein, wherein the method comprises a step of detecting in a biological sample obtained from said subject nucleic

acid molecules, if any, comprising a nucleotide sequence that is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; the nucleotide sequence as defined in column 4 of Table 1A or columns 8 and 9 of Table 2 or the complementary strand thereto; and a nucleotide sequence of cDNA contained in Clone ID NO:Z.

[0834] The method for diagnosing a pathological condition can comprise a step of detecting nucleic acid molecules comprising a nucleotide sequence in a panel of at least two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from said group.

[0835] Also preferred is a composition of matter comprising isolated nucleic acid molecules wherein the nucleotide sequences of said nucleic acid molecules comprise a panel of at least two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; the nucleotide sequence as defined in column 4 of Table 1A or columns 8 and 9 of Table 2 or the complementary strand thereto; and a nucleotide sequence encoded by cDNA contained in Clone ID NO:Z. The nucleic acid molecules can comprise DNA molecules or RNA molecules.

[0836] Also preferred is a composition of matter comprising isolated nucleic acid molecules wherein the nucleotide sequences of said nucleic acid molecules comprise a DNA microarray or "chip" of at least 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 40, 50, 100, 150, 200, 250, 300, 500, 1000, 2000, 3000, or 4000 nucleotide sequences, wherein at least one sequence in said DNA microarray or "chip" is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X wherein X is any integer as defined in Table 1A; and a nucleotide sequence encoded by a human cDNA clone identified by a cDNA "Clone ID" in Table 1A.

[0837] Also preferred is an isolated polypeptide comprising an amino acid sequence at least 90% identical to a sequence of at least about 10 contiguous amino acids in the polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the

complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and/or a polypeptide encoded by cDNA contained in Clone ID NO:Z.

[0838] Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 30 contiguous amino acids in the amino acid sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and/or a polypeptide encoded by cDNA contained in Clone ID NO:Z.

[0839] Further preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 100 contiguous amino acids in the amino acid sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and/or a polypeptide encoded by cDNA contained in Clone ID NO:Z.

[0840] Further preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to the complete amino acid sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and/or a polypeptide encoded by cDNA contained in Clone ID NO:Z.

[0841] Further preferred is an isolated polypeptide comprising an amino acid sequence at least 90% identical to a sequence of at least about 10 contiguous amino acids in the complete amino acid sequence of a polypeptide encoded by contained in Clone ID NO:Z

[0842] Also preferred is a polypeptide wherein said sequence of contiguous amino acids is included in the amino acid sequence of a portion of said polypeptide encoded by cDNA contained in Clone ID NO:Z; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and/or the polypeptide sequence of SEQ ID NO:Y.

[0843] Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 30 contiguous amino acids in the amino acid sequence of a polypeptide encoded by the cDNA contained in Clone ID NO:Z.

- [0844] Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 100 contiguous amino acids in the amino acid sequence of a polypeptide encoded by cDNA contained in Clone ID NO:Z.
- [0845] Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to the amino acid sequence of a polypeptide encoded by the cDNA contained in Clone ID NO:Z.
- [0846] Further preferred is an isolated antibody which binds specifically to a polypeptide comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: a polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in Clone ID NO:Z.
- [0847] Further preferred is a method for detecting in a biological sample a polypeptide comprising an amino acid sequence which is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: a polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in Clone ID NO:Z; which method comprises a step of comparing an amino acid sequence of at least one polypeptide molecule in said sample with a sequence selected from said group and determining whether the sequence of said polypeptide molecule in said sample is at least 90% identical to said sequence of at least 10 contiguous amino acids.
- [0848] Also preferred is the above method wherein said step of comparing an amino acid sequence of at least one polypeptide molecule in said sample with a sequence selected from said group comprises determining the extent of specific binding of polypeptides in said sample to an antibody which binds specifically to a polypeptide comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: a polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as

defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in Clone ID NO:Z.

[0849] Also preferred is the above method wherein said step of comparing sequences is performed by comparing the amino acid sequence determined from a polypeptide molecule in said sample with said sequence selected from said group.

[0850] Also preferred is a method for identifying the species, tissue or cell type of a biological sample which method comprises a step of detecting polypeptide molecules in said sample, if any, comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in Clone ID NO:Z.

[0851] Also preferred is the above method for identifying the species, tissue or cell type of a biological sample, which method comprises a step of detecting polypeptide molecules comprising an amino acid sequence in a panel of at least two amino acid sequences, wherein at least one sequence in said panel is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the above group.

[0852] Also preferred is a method for diagnosing in a subject a pathological condition associated with abnormal structure or expression of a nucleic acid sequence identified in Table 1A or Table 2 encoding a polypeptide, which method comprises a step of detecting in a biological sample obtained from said subject polypeptide molecules comprising an amino acid sequence in a panel of at least two amino acid sequences, wherein at least one sequence in said panel is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in Clone ID NO:Z.

[0853] In any of these methods, the step of detecting said polypeptide molecules includes using an antibody.

- [0854] Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a nucleotide sequence encoding a polypeptide wherein said polypeptide comprises an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in Clone ID NO:Z.
- [0855] Also preferred is an isolated nucleic acid molecule, wherein said nucleotide sequence encoding a polypeptide has been optimized for expression of said polypeptide in a prokaryotic host.
- [0856] Also preferred is a polypeptide molecule, wherein said polypeptide comprises an amino acid sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in Clone ID NO:Z.
- [0857] Further preferred is a method of making a recombinant vector comprising inserting any of the above isolated nucleic acid molecule into a vector. Also preferred is the recombinant vector produced by this method. Also preferred is a method of making a recombinant host cell comprising introducing the vector into a host cell, as well as the recombinant host cell produced by this method.
- [0858] Also preferred is a method of making an isolated polypeptide comprising culturing this recombinant host cell under conditions such that said polypeptide is expressed and recovering said polypeptide. Also preferred is this method of making an isolated polypeptide, wherein said recombinant host cell is a eukaryotic cell and said polypeptide is a human protein comprising an amino acid sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in Clone ID NO:Z. The isolated polypeptide produced by this method is also preferred.



[0859] Also preferred is a method of treatment of an individual in need of an increased level of a protein activity, which method comprises administering to such an individual a Therapeutic comprising an amount of an isolated polypeptide, polynucleotide, immunogenic fragment or analogue thereof, binding agent, antibody, or antigen binding fragment of the claimed invention effective to increase the level of said protein activity in said individual.

[0860] Also preferred is a method of treatment of an individual in need of a decreased level of a protein activity, which method comprised administering to such an individual a Therapeutic comprising an amount of an isolated polypeptide, polynucleotide, immunogenic fragment or analogue thereof, binding agent, antibody, or antigen binding fragment of the claimed invention effective to decrease the level of said protein activity in said individual.

[0861] Also preferred is a method of treatment of an individual in need of a specific delivery of toxic compositions to diseased cells (e.g., tumors, leukemias or lymphomas), which method comprises administering to such an individual a Therapeutic comprising an amount of an isolated polypeptide of the invention, including, but not limited to a binding agent, or antibody of the claimed invention that are associated with toxin or cytotoxic prodrugs.

[0862] Having generally described the invention, the same will be more readily understood by reference to the following examples, which are provided by way of illustration and are not intended as limiting.

**TABLE 6**

ATCC Deposits	Deposit Date	ATCC Designation Number
LP01, LP02, LP03, LP04, LP05, LP06, LP07, LP08, LP09, LP10, LP11,	May-20-97	209059, 209060, 209061, 209062, 209063, 209064, 209065, 209066, 209067, 209068, 209069
LP12	Jan-12-98	209579
LP13	Jan-12-98	209578

LP14	Jul-16-98	203067
LP15	Jul-16-98	203068
LP16	Feb-1-99	203609
LP17	Feb-1-99	203610
LP20	Nov-17-98	203485
LP21	Jun-18-99	PTA-252
LP22	Jun-18-99	PTA-253
LP23	Dec-22-99	PTA-1081

### *Examples*

#### *Example 1: Isolation of a Selected cDNA Clone From the Deposited Sample*

[0863] Each Clone ID NO:Z is contained in a plasmid. Table 7 identifies the vectors used to construct the cDNA library from which each clone was isolated. In many cases, the vector used to construct the library is a phage vector from which a plasmid has been excised. The following correlates the related plasmid for each phage vector used in constructing the cDNA library. For example, where a particular clone is identified in Table 7 as being isolated in the vector "Lambda Zap," the corresponding deposited clone is in "pBluescript."

<u>Vector Used to Construct Library</u>	<u>Corresponding Deposited Plasmid</u>
Lambda Zap	pBluescript (pBS)
Uni-Zap XR	pBluescript (pBS)
Zap Express	pBK
laphmid BA	plafmid BA
pSport1	pSport1
pCMVSPORT 2.0	pCMVSPORT 2.0
pCMVSPORT 3.0	pCMVSPORT 3.0
pCR®2.1	pCR®2.1

[0864] Vectors Lambda Zap (U.S. Patent Nos. 5,128,256 and 5,286,636), Uni-Zap XR (U.S. Patent Nos. 5,128, 256 and 5,286,636), Zap Express (U.S. Patent Nos. 5,128,256 and 5,286,636), pBluescript (pBS) (Short, J. M. et al., Nucleic Acids Res. 16:7583-7600 (1988); Altting-Mees, M. A. and Short, J. M., Nucleic Acids Res. 17:9494 (1989)) and pBK (Altting-Mees, M. A. et al., Strategies 5:58-61 (1992)) are commercially available from Stratagene Cloning Systems, Inc., 11011 N. Torrey Pines Road, La Jolla, CA, 92037. pBS contains an ampicillin resistance gene and pBK contains a neomycin resistance gene. Both can be transformed into E. coli strain XL-1 Blue, also available from Stratagene. pBS comes in 4 forms SK+, SK-, KS+ and KS-. The S and K refers to the orientation of the polylinker to the T7 and T3 primer sequences which flank the polylinker region ("S" is for SacI and "K" is for KpnI which are the first sites on each respective end of the linker).

"+" or "-" refer to the orientation of the fl origin of replication ("ori"), such that in one orientation, single stranded rescue initiated from the fl ori generates sense strand DNA and in the other, antisense.

[0865] Vectors pSport1, pCMVSPORT 2.0 and pCMVSPORT 3.0, were obtained from Life Technologies, Inc., P. O. Box 6009, Gaithersburg, MD 20897. All Sport vectors contain an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, also available from Life Technologies. (See, for instance, Gruber, C. E., et al., *Focus* 15:59 (1993).) Vector lafmid BA (Bento Soares, Columbia University, NY) contains an ampicillin resistance gene and can be transformed into *E. coli* strain XL-1 Blue. Vector pCR®2.1, which is available from Invitrogen, 1600 Faraday Avenue, Carlsbad, CA 92008, contains an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, available from Life Technologies. (See, for instance, Clark, J. M., *Nuc. Acids Res.* 16:9677-9686 (1988) and Mead, D. et al., *Bio/Technology* 9: (1991).) Preferably, a polynucleotide of the present invention does not comprise the vector sequences identified for the particular clone in Table 7, as well as the corresponding plasmid vector sequences designated above.

[0866] The deposited material in the sample assigned the ATCC Deposit Number cited by reference to Tables 1A, 2, 6 and 7 for any given cDNA clone also may contain one or more additional plasmids, each comprising a cDNA clone different from that given clone. Thus, deposits sharing the same ATCC Deposit Number contain at least a plasmid for each Clone ID NO:Z.

**TABLE 7**

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HUKA HUKB HUKC HUKD HUKF HUKG	Human Uterine Cancer	Lambda ZAP II	LP01
HCNA HCNB	Human Colon	Lambda Zap II	LP01
HFFA	Human Fetal Brain, random primed	Lambda Zap II	LP01
HTWA	Resting T-Cell	Lambda ZAP II	LP01
HBQA	Early Stage Human Brain, random primed	Lambda ZAP II	LP01
HLMB HLMF HLMG HLMH HLMJ HLMK HLMN	breast lymph node cDNA library	Lambda ZAP II	LP01
HCQA HCQB	human colon cancer	Lambda ZAP II	LP01
HMEA HMEC HMEF HMEG	Human Microvascular Endothelial	Lambda ZAP II	LP01

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HMEF HMEG HMEI HMEJ HMEK HMEI	Cells, fract. A		
HUSA HUSC	Human Umbilical Vein Endothelial Cells, fract. A	Lambda ZAP II	LP01
HLQA HLQB	Hepatocellular Tumor	Lambda ZAP II	LP01
HHGA HHGB HHGC HHGD	Hemangiopericytoma	Lambda ZAP II	LP01
HSDM	Human Striatum Depression, re-rescue	Lambda ZAP II	LP01
HUSH	H Umbilical Vein Endothelial Cells, frac A, re-excision	Lambda ZAP II	LP01
HSGS	Salivary gland, subtracted	Lambda ZAP II	LP01
HFXA HFXB HFXC HFXD HFYE HFXF HFXG HFXH	Brain frontal cortex	Lambda ZAP II	LP01
HPQA HPQB HPQC	PERM TF274	Lambda ZAP II	LP01
HFJX HFJK	Brain Frontal Cortex, re-excision	Lambda ZAP II	LP01
HCWA HCWB HCWC HCWD HCWE HCWF HCWG HCWH HCWI HCWJ HCWK	CD34 positive cells (Cord Blood)	ZAP Express	LP02
HCUA HCUB HCUC	CD34 depleted Buffy Coat (Cord Blood)	ZAP Express	LP02
HRSM	A-14 cell line	ZAP Express	LP02
HRSA	A1-CELL LINE	ZAP Express	LP02
HCUD HCUE HCUF HCUG HCUH HCUI	CD34 depleted Buffy Coat (Cord Blood), re-excision	ZAP Express	LP02
HBXE HBXF HBXG	H. Whole Brain #2, re-excision	ZAP Express	LP02
HRLM	L8 cell line	ZAP Express	LP02
HBXA HBXB HBXC HBXD	Human Whole Brain #2 - Oligo dT > 1.5Kb	ZAP Express	LP02
HUDA HUDB HUDC	Testes	ZAP Express	LP02
HHTM HHTN HHTO	H. hypothalamus, frac A, re-excision	ZAP Express	LP02
HHTL	H. hypothalamus, frac A	ZAP Express	LP02
HASA HASD	Human Adult Spleen	Uni-ZAP XR	LP03
HFKC HFKD HFKE HFKF HFKG	Human Fetal Kidney	Uni-ZAP XR	LP03
HE8A HE8B HE8C HE8D HE8E HE8F HE8M HE8N	Human 8 Week Whole Embryo	Uni-ZAP XR	LP03
HGBA HGBD HGBE HGBF HGBG HGBH HGBI	Human Gall Bladder	Uni-ZAP XR	LP03
HLHA HLHB HLHC HLHD HLHE HLHF HLHG HLHH HLHQ	Human Fetal Lung III	Uni-ZAP XR	LP03
HPMA HPMB HPMC HPMD HPME HPMF HPMG HPMH	Human Placenta	Uni-ZAP XR	LP03
HPRA HPRB HPRC HPRD	Human Prostate	Uni-ZAP XR	LP03
HSIA HSIC HSID HSIE	Human Adult Small Intestine	Uni-ZAP XR	LP03
HTEA HTEB HTEC HTEd HTEE HTEF HTEG HTEH HTEI HTEJ HTEK	Human Testes	Uni-ZAP XR	LP03
HTPA HTPB HTPC HTPD HTPE	Human Pancreas Tumor	Uni-ZAP XR	LP03
HTTA HTTB HTTC HTTD	Human Testes Tumor	Uni-ZAP XR	LP03

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HTTE HTTF			
HAPA HAPB HAPC HAPM	Human Adult Pulmonary	Uni-ZAP XR	LP03
HETA HETB HETC HETD HETE HETF HETG HETH HETI	Human Endometrial Tumor	Uni-ZAP XR	LP03
HHFB HHFC HHFD HHFE HHFF HHFG HHFH HHFI	Human Fetal Heart	Uni-ZAP XR	LP03
HHPB HHPC HHPD HHPE HHPF HHPG HHPH	Human Hippocampus	Uni-ZAP XR	LP03
HCE1 HCE2 HCE3 HCE4 HCE5 HCEB HCEC HCED HCEE HCEF HCEG	Human Cerebellum	Uni-ZAP XR	LP03
HUVB HUV C HUVD HUVE	Human Umbilical Vein, Endo. remake	Uni-ZAP XR	LP03
HSTA HSTB HSTC HSTD	Human Skin Tumor	Uni-ZAP XR	LP03
HTAA HTAB HTAC HTAD HTAE	Human Activated T-Cells	Uni-ZAP XR	LP03
HFEA HFEB HFEC	Human Fetal Epithelium (Skin)	Uni-ZAP XR	LP03
HJPA HJPB HJPC HJPD	HUMAN JURKAT MEMBRANE BOUND POLYSOMES	Uni-ZAP XR	LP03
HESA	Human epithelioid sarcoma	Uni-Zap XR	LP03
HLTA HLTB HLTC HLTD HLTE HLTF	Human T-Cell Lymphoma	Uni-ZAP XR	LP03
HFTA HFTB HFTC HFTD	Human Fetal Dura Mater	Uni-ZAP XR	LP03
HRDA HRDB HRDC HRDD HRDE HRDF	Human Rhabdomyosarcoma	Uni-ZAP XR	LP03
HCAA HCAB HCAC	Cem cells cyclohexamide treated	Uni-ZAP XR	LP03
HRGA HRGB HRGC HRGD	Raji Cells, cyclohexamide treated	Uni-ZAP XR	LP03
HSUA HSUB HSUC HSUM	Supt Cells, cyclohexamide treated	Uni-ZAP XR	LP03
HT4A HT4C HT4D	Activated T-Cells, 12 hrs.	Uni-ZAP XR	LP03
HE9A HE9B HE9C HE9D HE9E HE9F HE9G HE9H HE9M HE9N	Nine Week Old Early Stage Human	Uni-ZAP XR	LP03
HATA HATB HATC HATD HATE	Human Adrenal Gland Tumor	Uni-ZAP XR	LP03
HT5A	Activated T-Cells, 24 hrs.	Uni-ZAP XR	LP03
HFGA HFGM	Human Fetal Brain	Uni-ZAP XR	LP03
HNEA HNEB HNEC HNED HNEE	Human Neutrophil	Uni-ZAP XR	LP03
HBGB HBGD	Human Primary Breast Cancer	Uni-ZAP XR	LP03
HBNA HBNB	Human Normal Breast	Uni-ZAP XR	LP03
HCAS	Cem Cells, cyclohexamide treated, subtra	Uni-ZAP XR	LP03
HHPS	Human Hippocampus, subtracted	pBS	LP03
HKCS HKCU	Human Colon Cancer, subtracted	pBS	LP03
HRGS	Raji cells, cyclohexamide treated, subtracted	pBS	LP03
HSUT	Supt cells, cyclohexamide treated, differentially expressed	pBS	LP03
HT4S	Activated T-Cells, 12 hrs, subtracted	Uni-ZAP XR	LP03

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HCDA HCDB HCDC HCDD HCDE	Human Chondrosarcoma	Uni-ZAP XR	LP03
HOAA HOAB HOAC	Human Osteosarcoma	Uni-ZAP XR	LP03
HTLA HTLB HTLC HTLD HTLE HTLF	Human adult testis, large inserts	Uni-ZAP XR	LP03
HLMA HLMC HLMD	Breast Lymph node cDNA library	Uni-ZAP XR	LP03
H6EA H6EB H6EC	HL-60, PMA 4H	Uni-ZAP XR	LP03
HTXA HTXB HTXC HTXD HTXE HTXF HTXG HTXH	Activated T-Cell (12hs)/Thiouridine labelledEco	Uni-ZAP XR	LP03
HNFA HNFH HNFC HNFD HNFE HNFF HNFG HNFI HNFI	Human Neutrophil, Activated	Uni-ZAP XR	LP03
HTOB HTOC	HUMAN TONSILS, FRACTION 2	Uni-ZAP XR	LP03
HMGB	Human OB MG63 control fraction I	Uni-ZAP XR	LP03
HOPB	Human OB HOS control fraction I	Uni-ZAP XR	LP03
HORB	Human OB HOS treated (10 nM E2) fraction I	Uni-ZAP XR	LP03
HSVA HSVB H SVC	Human Chronic Synovitis	Uni-ZAP XR	LP03
HROA	HUMAN STOMACH	Uni-ZAP XR	LP03
HBJA HBJB HBJC HBJD HBJE HBJF HBJG HBJH HBJI HBJJ HBJK	HUMAN B CELL LYMPHOMA	Uni-ZAP XR	LP03
HCRA HCRB HCRC	human corpus colosum	Uni-ZAP XR	LP03
HODA HODB HODC HODD	human ovarian cancer	Uni-ZAP XR	LP03
HDSA	Dermatofibrosarcoma Protuberance	Uni-ZAP XR	LP03
HMWA HMWB HMWC HMWD HMWE HMWF HMWG HMWH HMWI HMWJ	Bone Marrow Cell Line (RS4;11)	Uni-ZAP XR	LP03
H SOA	stomach cancer (human)	Uni-ZAP XR	LP03
HERA	SKIN	Uni-ZAP XR	LP03
HMDA	Brain-medulloblastoma	Uni-ZAP XR	LP03
HGLA HGLB HGLD	Glioblastoma	Uni-ZAP XR	LP03
HEAA	H. Atrophic Endometrium	Uni-ZAP XR	LP03
HBCA HBCB	H. Lymph node breast Cancer	Uni-ZAP XR	LP03
HPWT	Human Prostate BPH, re-excision	Uni-ZAP XR	LP03
HFVG HFVH HFVI	Fetal Liver, subtraction II	pBS	LP03
HNFI	Human Neutrophils, Activated, re-excision	pBS	LP03
HBMB HBMC HBMD	Human Bone Marrow, re-excision	pBS	LP03
HKML HKMM HKMN	H. Kidney Medulla, re-excision	pBS	LP03
HKIX HKIY	H. Kidney Cortex, subtracted	pBS	LP03
HADT	H. Amygdala Depression, subtracted	pBS	LP03
H6AS	HL-60, untreated, subtracted	Uni-ZAP XR	LP03
H6ES	HL-60, PMA 4H, subtracted	Uni-ZAP XR	LP03
H6BS	HL-60, RA 4h, Subtracted	Uni-ZAP XR	LP03
H6CS	HL-60, PMA 1d, subtracted	Uni-ZAP XR	LP03
HTXJ HTXK	Activated T-cell(12h)/Thiouridine-re-excision	Uni-ZAP XR	LP03
HMSA HMSB HMSC HMSD	Monocyte activated	Uni-ZAP XR	LP03

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HMSE HMSF HMSG HMSH HMSI HMSJ HMSK			
HAGA HAGB HAGC HAGD HAGE HAGF	Human Amygdala	Uni-ZAP XR	LP03
HSRA HSRB HSRE	STROMAL -OSTEOCLASTOMA	Uni-ZAP XR	LP03
HSRD HSRF HSRG HSRH	Human Osteoclastoma Stromal Cells - unamplified	Uni-ZAP XR	LP03
HSQA HSQB HSQC HSQD HSQE HSQF HSQG	Stromal cell TF274	Uni-ZAP XR	LP03
HSKA HSKB HSKC HSKD HSKE HSKF HSKZ	Smooth muscle, serum treated	Uni-ZAP XR	LP03
HSLA HSLB HSLC HSLD HSL E HSLF HSLG	Smooth muscle, control	Uni-ZAP XR	LP03
HSDA HSDD HSDE HSDF HSDG HSDH	Spinal cord	Uni-ZAP XR	LP03
HPWS	Prostate-BPH subtracted II	pBS	LP03
HSKW HSKX HSKY	Smooth Muscle- HASTE normalized	pBS	LP03
HFPB HFPC HFPD	H. Frontal cortex, epileptic; re- excision	Uni-ZAP XR	LP03
HSDI HSDJ HSDK	Spinal Cord, re-excision	Uni-ZAP XR	LP03
HSKN HSKO	Smooth Muscle Serum Treated, Norm	pBS	LP03
HSKG HSKH HSKI	Smooth muscle, serum induced, re- exc	pBS	LP03
HFC A HFCB HFCC HFCD HFCE HFCF	Human Fetal Brain	Uni-ZAP XR	LP04
HPTA HPTB HPTD	Human Pituitary	Uni-ZAP XR	LP04
HTHB HTHC HTHD	Human Thymus	Uni-ZAP XR	LP04
HE6B HE6C HE6D HE6E HE6F HE6G HE6S	Human Whole Six Week Old Embryo	Uni-ZAP XR	LP04
HSSA HSSB HSSC HSSD HSSE HSSF HSSG HSSH HSSI HSSJ HSSK	Human Synovial Sarcoma	Uni-ZAP XR	LP04
HE7T	7 Week Old Early Stage Human, subtracted	Uni-ZAP XR	LP04
HEPA HEPB HEPC	Human Epididymus	Uni-ZAP XR	LP04
HSNA HSNB HSN C HSNM HSNN	Human Synovium	Uni-ZAP XR	LP04
HPFB HPFC HPFD HPFE	Human Prostate Cancer, Stage C fraction	Uni-ZAP XR	LP04
HE2A HE2D HE2E HE2H HE2I HE2M HE2N HE2O	12 Week Old Early Stage Human	Uni-ZAP XR	LP04
HE2B HE2C HE2F HE2G HE2P HE2Q	12 Week Old Early Stage Human, II	Uni-ZAP XR	LP04
HPTS HPTT HPTU	Human Pituitary, subtracted	Uni-ZAP XR	LP04
HAUA HAUB HAUC	Amniotic Cells - TNF induced	Uni-ZAP XR	LP04
HAQA HAQB HAQC HAQD	Amniotic Cells - Primary Culture	Uni-ZAP XR	LP04
HWTA HWTB HWTC	wilm's tumor	Uni-ZAP XR	LP04
HBSD	Bone Cancer, re-excision	Uni-ZAP XR	LP04
HSGB	Salivary gland, re-excision	Uni-ZAP XR	LP04
HSJA HSJB HSJC	Smooth muscle-ILb induced	Uni-ZAP XR	LP04



Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HSXA HSXB HSXC HSXD	Human Substantia Nigra	Uni-ZAP XR	LP04
HSHA HSHB HSHC	Smooth muscle, IL1b induced	Uni-ZAP XR	LP04
HOUA HOUB HOU C HOUD HOUE	Adipocytes	Uni-ZAP XR	LP04
HPWA HPWB HPWC HPWD HPWE	Prostate BPH	Uni-ZAP XR	LP04
HELA HELB HELC HELD HELE HELF HELG HELH	Endothelial cells-control	Uni-ZAP XR	LP04
HEMA HEMB HEMC HEMD HEME HEMF HEMG HEMH	Endothelial-induced	Uni-ZAP XR	LP04
HBIA HBIB HBIC	Human Brain, Striatum	Uni-ZAP XR	LP04
HHSA HHSB HHSC HHSD HHSE	Human Hypothalamus, Schizophrenia	Uni-ZAP XR	LP04
HNGA HNGB HNGC HNGD HNGE HNGF HNGG HNGH HNGI HNGJ	neutrophils control	Uni-ZAP XR	LP04
HNHA HNHB HNHC HNHD HNHE HNHF HNHG HNHH HNHI HNHI	Neutrophils IL-1 and LPS induced	Uni-ZAP XR	LP04
HSDB HSDC	STRIATUM DEPRESSION	Uni-ZAP XR	LP04
HHPT	Hypothalamus	Uni-ZAP XR	LP04
HSAT HSAU HSAV HSAW HSAX HSAZ	Anergic T-cell	Uni-ZAP XR	LP04
HBMS HBMT HBMU HBMV HBMW HBMX	Bone marrow	Uni-ZAP XR	LP04
HOEA HOEB HOEC HOED HOEE HOEF HOEJ	Osteoblasts	Uni-ZAP XR	LP04
HAIA HAIB HAIC HAID HAIE HAIF	Epithelial-TNFa and INF induced	Uni-ZAP XR	LP04
HTGA HTGB HTGC HTGD	Apoptotic T-cell	Uni-ZAP XR	LP04
HMCA HMCB HMCC HMCD HMCE	Macrophage-oxLDL	Uni-ZAP XR	LP04
HMAA HMA B HMA C HMA D HMAE HMAF HMA G	Macrophage (GM-CSF treated)	Uni-ZAP XR	LP04
HPHA	Normal Prostate	Uni-ZAP XR	LP04
HP1A HP1B HP1C	LNCAP prostate cell line	Uni-ZAP XR	LP04
HP1A HP1B HP1C	PC3 Prostate cell line	Uni-ZAP XR	LP04
HOSE HOSF HOSG	Human Osteoclastoma, re-excision	Uni-ZAP XR	LP04
HTGE HTGF	Apoptotic T-cell, re-excision	Uni-ZAP XR	LP04
HMAJ HMAK	H Macrophage (GM-CSF treated), re-excision	Uni-ZAP XR	LP04
HACB HACC HACD	Human Adipose Tissue, re-excision	Uni-ZAP XR	LP04
HFPA	H. Frontal Cortex, Epileptic	Uni-ZAP XR	LP04
HFAA HFAB HFAC HFAD HFAE	Alzheimers, spongy change	Uni-ZAP XR	LP04
HFAM	Frontal Lobe, Dementia	Uni-ZAP XR	LP04
HM1A HM1B HM1C	Human Manic Depression Tissue	Uni-ZAP XR	LP04
HTSA HTSE HTSF HTSG HTSH	Human Thymus	pBS	LP05
HPBA HPBB HPBC HPBD HPBE	Human Pineal Gland	pBS	LP05

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HSAA HSAB HSAC	HSA 172 Cells	pBS	LP05
HSBA HSBB HSBC HSBM	HSC172 cells	pBS	LP05
HJAA HJAB HJAC HJAD	Jurkat T-cell G1 phase	pBS	LP05
HJBA HJBB HJBC HJBD	Jurkat T-Cell, S phase	pBS	LP05
HAFA HAFB	Aorta endothelial cells + TNF-a	pBS	LP05
HAWA HAWB HAWC	Human White Adipose	pBS	LP05
HTNA HTNB	Human Thyroid	pBS	LP05
HONA	Normal Ovary, Premenopausal	pBS	LP05
HARA HARB	Human Adult Retina	pBS	LP05
HLJA HLJB	Human Lung	pCMVSPORT 1	LP06
HOFA HOFB HOFD	H. Ovarian Tumor, II, OV5232	pCMVSPORT 2.0	LP07
HOGA HOGB HOGC	OV 10-3-95	pCMVSPORT 2.0	LP07
HCGL	CD34+ cells, II	pCMVSPORT 2.0	LP07
HDLA	Hodgkin's Lymphoma I	pCMVSPORT 2.0	LP07
HDTA HDTB HDTD HDTD	Hodgkin's Lymphoma II	pCMVSPORT 2.0	LP07
HKAA HKAB HKAC HKAD HKAE HKAF HKAG HKAH	Keratinocyte	pCMVSPORT 2.0	LP07
HCIM	CAPFINDER, Crohn's Disease, lib 2	pCMVSPORT 2.0	LP07
HKAL	Keratinocyte, lib 2	pCMVSPORT 2.0	LP07
HKAT	Keratinocyte, lib 3	pCMVSPORT 2.0	LP07
HNDA	Nasal polyps	pCMVSPORT 2.0	LP07
HDRA	H. Primary Dendritic Cells, lib 3	pCMVSPORT 2.0	LP07
HOHA HOHB HOHC	Human Osteoblasts II	pCMVSPORT 2.0	LP07
HLDA HLDB HLDC	Liver, Hepatoma	pCMVSPORT 3.0	LP08
HLDN HLDO HLDP	Human Liver, normal	pCMVSPORT 3.0	LP08
HMTA	pBMC stimulated w/ poly I/C	pCMVSPORT 3.0	LP08
HNTA	NTERA2, control	pCMVSPORT 3.0	LP08
HDP A HDP B HDP C HDP D HDP F HDP G HDP H HDP I HDP J HDP K	Primary Dendritic Cells, lib 1	pCMVSPORT 3.0	LP08
HDP M HDP N HDP O HDP P	Primary Dendritic cells, frac 2	pCMVSPORT 3.0	LP08
HMUA HMUB HMUC	Myeloid Progenitor Cell Line	pCMVSPORT 3.0	LP08
HHEA HHEB HHEC HHE D	T Cell helper I	pCMVSPORT 3.0	LP08
HHEM HHEN HHEO HHEP	T cell helper II	pCMVSPORT 3.0	LP08
HEQA HEQB HEQC	Human endometrial stromal cells	pCMVSPORT 3.0	LP08
HJMA HJMB	Human endometrial stromal cells- treated with progesterone	pCMVSPORT 3.0	LP08
HSWA HSWB HSWC	Human endometrial stromal cells- treated with estradiol	pCMVSPORT 3.0	LP08
HSYA HSYB HSYC	Human Thymus Stromal Cells	pCMVSPORT 3.0	LP08
HLWA HLWB HLWC	Human Placenta	pCMVSPORT 3.0	LP08
HRAA HRA B HRAC	Rejected Kidney, lib 4	pCMVSPORT 3.0	LP08
HMTM	PCR, pBMC I/C treated	PCR II	LP09
HMJA	H. Meningioma, M6	pSport 1	LP10
HMKA HMK B HMK C HMK D HMKE	H. Meningioma, M1	pSport 1	LP10

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HUSG HUSI	Human umbilical vein endothelial cells, IL-4 induced	pSport 1	LP10
HUSX HUSY	Human Umbilical Vein Endothelial Cells, uninduced	pSport 1	LP10
HOFA	Ovarian Tumor I, OV5232	pSport 1	LP10
HCFA HCFB HCFC HCFD	T-Cell PHA 16 hrs	pSport 1	LP10
HCFL HCFM HCFN HCFO	T-Cell PHA 24 hrs	pSport 1	LP10
HADA HADC HADD HADE HADF HADG	Human Adipose	pSport 1	LP10
HOVA HOVB HOVC	Human Ovary	pSport 1	LP10
HTWB HTWC HTWD HTWE HTWF	Resting T-Cell Library,II	pSport 1	LP10
HMMA	Spleen metastatic melanoma	pSport 1	LP10
HLYA HLYB HLYC HLYD HLYE	Spleen, Chronic lymphocytic leukemia	pSport 1	LP10
HCGA	CD34+ cell, 1	pSport 1	LP10
HEOM HEON	Human Eosinophils	pSport 1	LP10
HTDA	Human Tonsil, Lib 3	pSport 1	LP10
HSPA	Salivary Gland, Lib 2	pSport 1	LP10
HCHA HCHB HCHC	Breast Cancer cell line, MDA 36	pSport 1	LP10
HCHM HCHN	Breast Cancer Cell line, angiogenic	pSport 1	LP10
HCIA	Crohn's Disease	pSport 1	LP10
HDAA HDAB HDAC	HEL cell line	pSport 1	LP10
HABA	Human Astrocyte	pSport 1	LP10
HUFA HUFB HUFC	Ulcerative Colitis	pSport 1	LP10
HNTM	NTERA2 + retinoic acid, 14 days	pSport 1	LP10
HDQA	Primary Dendritic cells, CapFinder2, frac 1	pSport 1	LP10
HDQM	Primary Dendritic Cells, CapFinder, frac 2	pSport 1	LP10
HLDX	Human Liver, normal,	pSport 1	LP10
HULA HULB HULC	Human Dermal Endothelial Cells, untreated	pSport1	LP10
HUMA	Human Dermal Endothelial cells, treated	pSport1	LP10
HCJA	Human Stromal Endometrial fibroblasts, untreated	pSport1	LP10
HCJM	Human Stromal endometrial fibroblasts, treated w/ estradiol	pSport1	LP10
HEDA	Human Stromal endometrial fibroblasts, treated with progesterone	pSport1	LP10
HFNA	Human ovary tumor cell OV350721	pSport1	LP10
HKGA HKGB HKGC HKGD	Merkel Cells	pSport1	LP10
HISA HISB HISC	Pancreas Islet Cell Tumor	pSport1	LP10
HLSA	Skin, burned	pSport1	LP10
HBZA	Prostate, BPH, Lib 2	pSport 1	LP10
HBZS	Prostate BPH, Lib 2, subtracted	pSport 1	LP10
HFIA HFIB HFIC	Synovial Fibroblasts (control)	pSport 1	LP10
HFII HFII HFII	Synovial hypoxia	pSport 1	LP10

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HFIT HFIU HFIV	Synovial IL-1/TNF stimulated	pSport 1	LP10
HGCA	Mesangial cell, frac 1	pSport1	LP10
HMVA HMVB HMVC	Bone Marrow Stromal Cell, untreated	pSport1	LP10
HFIX HFIV HFIZ	Synovial Fibroblasts (III/TNF), subt	pSport1	LP10
HFOX HFOY HFOZ	Synovial hypoxia-RSF subtracted	pSport1	LP10
HMQA HMQB HMQC HMQD	Human Activated Monocytes	Uni-ZAP XR	LP11
HLJA HLJB HLIC	Human Liver	pCMVSPORT 1	LP012
HHBA HHBB HHBC HHBD HHBE	Human Heart	pCMVSPORT 1	LP012
HBBA HBBC	Human Brain	pCMVSPORT 1	LP012
HLJA HLJB HLJC HLJD HLJE	Human Lung	pCMVSPORT 1	LP012
HOGA HOGB HOGC	Ovarian Tumor	pCMVSPORT 2.0	LP012
HTJM	Human Tonsils, Lib 2	pCMVSPORT 2.0	LP012
HAMF HAMG	KMH2	pCMVSPORT 3.0	LP012
HAJA HAJB HAJC	L428	pCMVSPORT 3.0	LP012
HWBA HWBB HWBC HWBD HWBE	Dendritic cells, pooled	pCMVSPORT 3.0	LP012
HWAA HWAB HWAC HWAD HWAE	Human Bone Marrow, treated	pCMVSPORT 3.0	LP012
HYAA HYAB HYAC	B Cell lymphoma	pCMVSPORT 3.0	LP012
HWHG HWHH HWHI	Healing groin wound, 6.5 hours post incision	pCMVSPORT 3.0	LP012
HWHP HWHQ HWHR	Healing groin wound; 7.5 hours post incision	pCMVSPORT 3.0	LP012
HARM	Healing groin wound - zero hr post-incision (control)	pCMVSPORT 3.0	LP012
HBIM	Olfactory epithelium; nasal cavity	pCMVSPORT 3.0	LP012
HWDA	Healing Abdomen wound; 70&90 min post incision	pCMVSPORT 3.0	LP012
HWEA	Healing Abdomen Wound; 15 days post incision	pCMVSPORT 3.0	LP012
HWJA	Healing Abdomen Wound; 21&29 days	pCMVSPORT 3.0	LP012
HNAL	Human Tongue, frac 2	pSport1	LP012
HMJA	H. Meningioma, M6	pSport1	LP012
HMKA HMKB HMKC HMKD HMKE	H. Meningioma, M1	pSport1	LP012
HOFA	Ovarian Tumor 1, OV5232	pSport1	LP012
HCFA HCFB HCFD HCFC	T-Cell PHA 16 hrs	pSport1	LP012
HCFL HCFM HCFN HCFO	T-Cell PHA 24 hrs	pSport1	LP012
HMMMA HMMB HMMC	Spleen metastatic melanoma	pSport1	LP012
HTDA	Human Tonsil, Lib 3	pSport1	LP012
HDBA	Human Fetal Thymus	pSport1	LP012
HDDA	Pericardium	pSport1	LP012
HBZA	Prostate, BPH, Lib 2	pSport1	LP012
HWCA	Larynx tumor	pSport1	LP012
HWKA	Normal lung	pSport1	LP012
HSMB	Bone marrow stroma, treated	pSport1	LP012
HBHM	Normal trachea	pSport1	LP012
HLFC	Human Larynx	pSport1	LP012

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HLRB	Siebben Polyposis	pSport1	LP012
HNIA	Mammary Gland	pSport1	LP012
HNJB	Palate carcinoma	pSport1	LP012
HNKA	Palate normal	pSport1	LP012
HMZA	Pharynx carcinoma	pSport1	LP012
HABG	Cheek Carcinoma	pSport1	LP012
HMZM	Pharynx Carcinoma	pSport1	LP012
HDRM	Larynx Carcinoma	pSport1	LP012
HVAA	Pancreas normal PCA4 No	pSport1	LP012
HICA	Tongue carcinoma	pSport1	LP012
HUKA HUKB HUKC HUKD HUKF	Human Uterine Cancer	Lambda ZAP II	LP013
HFFA	Human Fetal Brain, random primed	Lambda ZAP II	LP013
HTUA	Activated T-cell labeled with 4-thiour	Lambda ZAP II	LP013
HBQA	Early Stage Human Brain, random primed	Lambda ZAP II	LP013
HMEB	Human microvascular Endothelial cells, fract. B	Lambda ZAP II	LP013
HUSH	Human Umbilical Vein Endothelial cells, fract. A, re-excision	Lambda ZAP II	LP013
HLQC HLQD	Hepatocellular tumor, re-excision	Lambda ZAP II	LP013
HTWJ HTWK HTWL	Resting T-cell, re-excision	Lambda ZAP II	LP013
HF6S	Human Whole 6 week Old Embryo (II), subt	pBluescript	LP013
HHPS	Human Hippocampus, subtracted	pBluescript	LP013
HLIS	LNCAp, differential expression	pBluescript	LP013
HLHS HLHT	Early Stage Human Lung, Subtracted	pBluescript	LP013
HSUS	Supt cells, cyclohexamide treated, subtracted	pBluescript	LP013
HSUT	Supt cells, cyclohexamide treated, differentially expressed	pBluescript	LP013
HSDS	H. Striatum Depression, subtracted	pBluescript	LP013
HPTZ	Human Pituitary, Subtracted VII	pBluescript	LP013
HSDX	H. Striatum Depression, subt II	pBluescript	LP013
HSDZ	H. Striatum Depression, subt	pBluescript	LP013
HPBA HPBB HPBC HPBD HPBE	Human Pineal Gland	pBluescript SK-	LP013
HRTA	Colorectal Tumor	pBluescript SK-	LP013
HSBA HSBB HSBC HSBM	HSC172 cells	pBluescript SK-	LP013
HJAA HJAB HJAC HJAD	Jurkat T-cell G1 phase	pBluescript SK-	LP013
HJBA HJBB HJBC HJBD	Jurkat T-cell, S1 phase	pBluescript SK-	LP013
HTNA HTNB	Human Thyroid	pBluescript SK-	LP013
HAHA HAHB	Human Adult Heart	Uni-ZAP XR	LP013
HE6A	Whole 6 week Old Embryo	Uni-ZAP XR	LP013
HFCA HFCE HFCC HFCD	Human Fetal Brain	Uni-ZAP XR	LP013

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HFCE			
HFKE HFKE HFKE HFKE HFKE	Human Fetal Kidney	Uni-ZAP XR	LP013
HGBA HGBD HGBE HGBF HGBG	Human Gall Bladder	Uni-ZAP XR	LP013
HPRA HPRB HPRC HPRD	Human Prostate	Uni-ZAP XR	LP013
HTEA HTEB HTEC HTED HTEE	Human Testes	Uni-ZAP XR	LP013
HTTA HTTB HTTC HTTD HTTE	Human Testes Tumor	Uni-ZAP XR	LP013
HYBA HYBB	Human Fetal Bone	Uni-ZAP XR	LP013
HFLA	Human Fetal Liver	Uni-ZAP XR	LP013
HHFB HHFC HHFD HHFE HHFF	Human Fetal Heart	Uni-ZAP XR	LP013
HUVB HUVB HUVB HUVB	Human Umbilical Vein, End. remake	Uni-ZAP XR	LP013
HTHB HTHC HTHD	Human Thymus	Uni-ZAP XR	LP013
HSTA HSTB HSTC HSTD	Human Skin Tumor	Uni-ZAP XR	LP013
HTAA HTAB HTAC HTAD HTAE	Human Activated T-cells	Uni-ZAP XR	LP013
HFEA HFEB HFEC	Human Fetal Epithelium (skin)	Uni-ZAP XR	LP013
HJPA HJPB HJPC HJPD	Human Jurkat Membrane Bound Polysomes	Uni-ZAP XR	LP013
HESA	Human Epithelioid Sarcoma	Uni-ZAP XR	LP013
HALS	Human Adult Liver, Subtracted	Uni-ZAP XR	LP013
HFTA HFTB HFTC HFTD	Human Fetal Dura Mater	Uni-ZAP XR	LP013
HCAA HCAB HCAC	Cem cells, cyclohexamide treated	Uni-ZAP XR	LP013
HRGA HRGB HRGC HRGD	Raji Cells, cyclohexamide treated	Uni-ZAP XR	LP013
HE9A HE9B HE9C HE9D HE9E	Nine Week Old Early Stage Human	Uni-ZAP XR	LP013
HSFA	Human Fibrosarcoma	Uni-ZAP XR	LP013
HATA HATB HATC HATD HATE	Human Adrenal Gland Tumor	Uni-ZAP XR	LP013
HTRA	Human Trachea Tumor	Uni-ZAP XR	LP013
HE2A HE2D HE2E HE2H HE2I	12 Week Old Early Stage Human	Uni-ZAP XR	LP013
HE2B HE2C HE2F HE2G HE2P	12 Week Old Early Stage Human, II	Uni-ZAP XR	LP013
HNEA HNEB HNEC HNEF HNEE	Human Neutrophil	Uni-ZAP XR	LP013
HBGA	Human Primary Breast Cancer	Uni-ZAP XR	LP013
HPTS HPTT HPTU	Human Pituitary, subtracted	Uni-ZAP XR	LP013
HMQA HMQB HMQC HMQD	Human Activated Monocytes	Uni-ZAP XR	LP013
HOAA HOAB HOAC	Human Osteosarcoma	Uni-ZAP XR	LP013
HTOA HTOD HTOE HTOF HTOG	human tonsils	Uni-ZAP XR	LP013
HMGB	Human OB MG63 control fraction I	Uni-ZAP XR	LP013
HOPB	Human OB HOS control fraction I	Uni-ZAP XR	LP013
HOQB	Human OB HOS treated (1 nM E2) fraction I	Uni-ZAP XR	LP013
HAUA HAUB HAUC	Amniotic Cells - TNF induced	Uni-ZAP XR	LP013
HAQA HAQB HAQC HAQD	Amniotic Cells - Primary Culture	Uni-ZAP XR	LP013
HROA HROC	HUMAN STOMACH	Uni-ZAP XR	LP013

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HBJA HBJB HBJC HBJD HBJE	HUMAN B CELL LYMPHOMA	Uni-ZAP XR	LP013
HODA HODB HODC HODD	human ovarian cancer	Uni-ZAP XR	LP013
HCPA	Corpus Callosum	Uni-ZAP XR	LP013
HSOA	stomach cancer (human)	Uni-ZAP XR	LP013
HERA	SKIN	Uni-ZAP XR	LP013
HMDA	Brain-medulloblastoma	Uni-ZAP XR	LP013
HGLA HGLB HGLD	Glioblastoma	Uni-ZAP XR	LP013
HWTA HWTB HWTC	wilm's tumor	Uni-ZAP XR	LP013
HEAA	H. Atrophic Endometrium	Uni-ZAP XR	LP013
HAPN HAPO HAPP HAPQ HAPR	Human Adult Pulmonary;re-excision	Uni-ZAP XR	LP013
HLTG HLTH	Human T-cell lymphoma;re-excision	Uni-ZAP XR	LP013
HAHC HAHD HAHE	Human Adult Heart;re-excision	Uni-ZAP XR	LP013
HAGA HAGB HAGC HAGD HAGE	Human Amygdala	Uni-ZAP XR	LP013
HSJA HSJB HSJC	Smooth muscle-ILb induced	Uni-ZAP XR	LP013
HSJA HSJB HSJC	Smooth muscle, IL1b induced	Uni-ZAP XR	LP013
HPWA HPWB HPWC HPWD HPWE	Prostate BPH	Uni-ZAP XR	LP013
HPJA HPJB HPJC	LNCAP prostate cell line	Uni-ZAP XR	LP013
HPJA HPJB HPJC	PC3 Prostate cell line	Uni-ZAP XR	LP013
HBTA	Bone Marrow Stroma, TNF&LPS ind	Uni-ZAP XR	LP013
HMCJ HMCB HMC C HMC D HMC E HMC F HMC G HMC H HMC I HMC J	Macrophage-oxLDL; re-excision	Uni-ZAP XR	LP013
HAGG HAGH HAGI	Human Amygdala;re-excision	Uni-ZAP XR	LP013
HACA	H. Adipose Tissue	Uni-ZAP XR	LP013
HKFB	K562 + PMA (36 hrs);re-excision	ZAP Express	LP013
HCWT HCWU HCWV	CD34 positive cells (cord blood);re-ex	ZAP Express	LP013
HBWA	Whole brain	ZAP Express	LP013
HBXA HBXB HBXC HBXD	Human Whole Brain #2 - Oligo dT > 1.5Kb	ZAP Express	LP013
HAVM	Temporal cortex-Alzheimer	pT-Adv	LP014
HAVT	Hippocampus, Alzheimer Subtracted	pT-Adv	LP014
HHAS	CHME Cell Line	Uni-ZAP XR	LP014
HAJR	Larynx normal	pSport 1	LP014
HWLE HWLF HWLG HWLH	Colon Normal	pSport 1	LP014
HCRM HCRN HCRO	Colon Carcinoma	pSport 1	LP014
HWLI HWLJ HWLK	Colon Normal	pSport 1	LP014
HWLQ HWLR HWLS HWLT	Colon Tumor	pSport 1	LP014
HBFM	Gastrocnemius Muscle	pSport 1	LP014
HBOD HBOE	Quadriceps Muscle	pSport 1	LP014
HBKD HBKE	Soleus Muscle	pSport 1	LP014
HCCM	Pancreatic Langerhans	pSport 1	LP014
HWGA	Larynx carcinoma	pSport 1	LP014
HWGM HWGN	Larynx carcinoma	pSport 1	LP014
HWLA HWLB HWLC	Normal colon	pSport 1	LP014
HWLM HWLN	Colon Tumor	pSport 1	LP014
HVAM HVAN HVAO	Pancreas Tumor	pSport 1	LP014
HWGQ	Larynx carcinoma	pSport 1	LP014

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HAQM HAQN	Salivary Gland	pSport 1	LP014
HASM	Stomach; normal	pSport 1	LP014
HBCM	Uterus; normal	pSport 1	LP014
HCDM	Testis; normal	pSport 1	LP014
HDJM	Brain; normal	pSport 1	LP014
HEFM	Adrenal Gland,normal	pSport 1	LP014
HBAA	Rectum normal	pSport 1	LP014
HFDM	Rectum tumour	pSport 1	LP014
HGAM	Colon, normal	pSport 1	LP014
HHMM	Colon, tumour	pSport 1	LP014
HCLB HCLC	Human Lung Cancer	Lambda Zap II	LP015
HRLA	L1 Cell line	ZAP Express	LP015
HHAM	Hypothalamus, Alzheimer's	pCMVSPort 3.0	LP015
HKBA	Ku 812F Basophils Line	pSport 1	LP015
HS2S	Saos2, Dexamethosome Treated	pSport 1	LP016
HASA	Lung Carcinoma A549 TNFalpha activated	pSport 1	LP016
HTFM	TF-1 Cell Line GM-CSF Treated	pSport 1	LP016
HYAS	Thyroid Tumour	pSport 1	LP016
HUTS	Larynx Normal	pSport 1	LP016
HXOA	Larynx Tumor	pSport 1	LP016
HEAH	Ea.hy.926 cell line	pSport 1	LP016
HINA	Adenocarcinoma Human	pSport 1	LP016
HRMA	Lung Mesothelium	pSport 1	LP016
HLCL	Human Pre-Differentiated Adipocytes	Uni-Zap XR	LP017
HS2A	Saos2 Cells	pSport 1	LP020
HS2I	Saos2 Cells; Vitamin D3 Treated	pSport 1	LP020
HUCM	CHME Cell Line, untreated	pSport 1	LP020
HEPN	Aryepiglottis Normal	pSport 1	LP020
HPSN	Sinus Piniformis Tumour	pSport 1	LP020
HNSA	Stomach Normal	pSport 1	LP020
HNSM	Stomach Tumour	pSport 1	LP020
HNLA	Liver Normal Met5No	pSport 1	LP020
HUTA	Liver Tumour Met 5 Tu	pSport 1	LP020
HOCN	Colon Normal	pSport 1	LP020
HOCT	Colon Tumor	pSport 1	LP020
HTNT	Tongue Tumour	pSport 1	LP020
HLXN	Larynx Normal	pSport 1	LP020
HLXT	Larynx Tumour	pSport 1	LP020
HTYN	Thymus	pSport 1	LP020
HPLN	Placenta	pSport 1	LP020
HTNG	Tongue Normal	pSport 1	LP020
HZAA	Thyroid Normal (SDCA2 No)	pSport 1	LP020
HWES	Thyroid Thyroiditis	pSport 1	LP020
HFHD	Ficolled Human Stromal Cells, 5Fu treated	pTrip1Ex2	LP021
HFHM,HFHN	Ficolled Human Stromal Cells, Untreated	pTrip1Ex2	LP021
HPCI	Hep G2 Cells, lambda library	lambda Zap-	LP021



Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
		CMV XR	
HBCA,HBCB,HBCC	H. Lymph node breast Cancer	Uni-ZAP XR	LP021
HCOK	Chondrocytes	pSPORT1	LP022
HDCA, HDCB, HDCC	Dendritic Cells From CD34 Cells	pSPORT1	LP022
HDMA, HDMB	CD40 activated monocyte dendritic cells	pSPORT1	LP022
HDDM, HDDN, HDDO	LPS activated derived dendritic cells	pSPORT1	LP022
HPCR	Hep G2 Cells, PCR library	lambda Zap-CMV XR	LP022
HAAA, HAAB, HAAC	Lung, Cancer (4005313A3): Invasive Poorly Differentiated Lung Adenocarcinoma	pSPORT1	LP022
HIPB, HIPB, HIPC	Lung, Cancer (4005163 B7): Invasive, Poorly Diff. Adenocarcinoma, Metastatic	pSPORT1	LP022
HOOH, HOOI	Ovary, Cancer: (4004562 B6) Papillary Serous Cystic Neoplasm, Low Malignant Pot	pSPORT1	LP022
HIDA	Lung, Normal: (4005313 B1)	pSPORT1	LP022
HUIA,HUIB,HUJC,HUJD,HUIE	B-Cells	pCMVSPORT 3.0	LP022
HNOA,HNOB,HNOC,HNOD	Ovary, Normal: (9805C040R)	pSPORT1	LP022
HNLM	Lung, Normal: (4005313 B1)	pSPORT1	LP022
HSCL	Stromal Cells	pSPORT1	LP022
HAAX	Lung, Cancer: (4005313 A3) Invasive Poorly-differentiated Metastatic lung adenocarcinoma	pSPORT1	LP022
HUUA,HUUB,HUUC,HUUD	B-cells (unstimulated)	pTriplEx2	LP022
HWWA,HWWB,HWWC,HWWD,HWWE,HWWF,HWWG	B-cells (stimulated)	pSPORT1	LP022
HCCC	Colon, Cancer: (9808C064R)	pCMVSPORT 3.0	LP023
HPDO HPDP HPDQ HPDR HPD	Ovary, Cancer (9809C332): Poorly differentiated adenocarcinoma	pSport 1	LP023
HPCO HPCP HPCQ HPCT	Ovary, Cancer (15395A1F): Grade II Papillary Carcinoma	pSport 1	LP023
HOCM HOCO HOCP HOCQ	Ovary, Cancer: (15799A1F) Poorly differentiated carcinoma	pSport 1	LP023
HCBM HCBN HCBO	Breast, Cancer: (4004943 A5)	pSport 1	LP023
HNBT HNBV HNBW	Breast, Normal: (4005522B2)	pSport 1	LP023
HBCP HBCQ	Breast, Cancer: (4005522 A2)	pSport 1	LP023
HBCJ	Breast, Cancer: (9806C012R)	pSport 1	LP023
HSAM HSAN	Stromal cells 3.88	pSport 1	LP023
HVCA HVCB HVCC HVCD	Ovary, Cancer: (4004332 A2)	pSport 1	LP023
HSCK HSEN HSEO	Stromal cells (HBM3.18)	pSport 1	LP023
HSCP HSCQ	stromal cell clone 2.5	pSport 1	LP023
HUXA	Breast Cancer: (4005385 A2)	pSport 1	LP023
HCOM HCON HCOO HCOP HCOQ	Ovary, Cancer (4004650 A3): Well-Differentiated Micropapillary Serous Carcinoma	pSport 1	LP023
HBNM	Breast, Cancer: (9802C020E)	pSport 1	LP023
HVVA HVVB HVVC HVVD HVVE	Human Bone Marrow, treated	pSport 1	LP023

[0867] Two nonlimiting examples are provided below for isolating a particular clone from the deposited sample of plasmid cDNAs cited for that clone in Table 7. First, a plasmid is directly isolated by screening the clones using a polynucleotide probe corresponding to the nucleotide sequence of SEQ ID NO:X.

[0868] Particularly, a specific polynucleotide with 30-40 nucleotides is synthesized using an Applied Biosystems DNA synthesizer according to the sequence reported. The oligonucleotide is labeled, for instance, with  $^{32}\text{P}$ - $\gamma$ -ATP using T4 polynucleotide kinase and purified according to routine methods. (E.g., Maniatis et al., *Molecular Cloning: A Laboratory Manual*, Cold Spring Harbor Press, Cold Spring, NY (1982).) The plasmid mixture is transformed into a suitable host, as indicated above (such as XL-1 Blue (Stratagene)) using techniques known to those of skill in the art, such as those provided by the vector supplier or in related publications or patents cited above. The transformants are plated on 1.5% agar plates (containing the appropriate selection agent, e.g., ampicillin) to a density of about 150 transformants (colonies) per plate. These plates are screened using Nylon membranes according to routine methods for bacterial colony screening (e.g., Sambrook et al., *Molecular Cloning: A Laboratory Manual*, 2nd Edit., (1989), Cold Spring Harbor Laboratory Press, pages 1.93 to 1.104), or other techniques known to those of skill in the art.

[0869] Alternatively, two primers of 17-20 nucleotides derived from both ends of the nucleotide sequence of SEQ ID NO:X are synthesized and used to amplify the desired cDNA using the deposited cDNA plasmid as a template. The polymerase chain reaction is carried out under routine conditions, for instance, in 25  $\mu\text{l}$  of reaction mixture with 0.5  $\mu\text{g}$  of the above cDNA template. A convenient reaction mixture is 1.5-5 mM  $\text{MgCl}_2$ , 0.01% (w/v) gelatin, 20  $\mu\text{M}$  each of dATP, dCTP, dGTP, dTTP, 25 pmol of each primer and 0.25 Unit of Taq polymerase. Thirty five cycles of PCR (denaturation at 94°C for 1 min; annealing at 55°C for 1 min; elongation at 72°C for 1 min) are performed with a Perkin-Elmer Cetus automated thermal cycler. The amplified product is analyzed by agarose gel electrophoresis and the DNA band with expected molecular weight is excised and purified. The PCR product is verified to be the selected sequence by subcloning and sequencing the DNA product.

[0870] Several methods are available for the identification of the 5' or 3' non-coding portions of a gene which may not be present in the deposited clone. These methods include but are not limited to, filter probing, clone enrichment using specific probes, and protocols similar or identical to 5' and 3' "RACE" protocols which are well known in the art. For instance, a method similar to 5' RACE is available for generating the missing 5' end of a desired full-length transcript. (Fromont-Racine et al., Nucleic Acids Res. 21(7):1683-1684 (1993).)

[0871] Briefly, a specific RNA oligonucleotide is ligated to the 5' ends of a population of RNA presumably containing full-length gene RNA transcripts. A primer set containing a primer specific to the ligated RNA oligonucleotide and a primer specific to a known sequence of the gene of interest is used to PCR amplify the 5' portion of the desired full-length gene. This amplified product may then be sequenced and used to generate the full length gene.

[0872] This above method starts with total RNA isolated from the desired source, although poly-A+ RNA can be used. The RNA preparation can then be treated with phosphatase if necessary to eliminate 5' phosphate groups on degraded or damaged RNA which may interfere with the later RNA ligase step. The phosphatase should then be inactivated and the RNA treated with tobacco acid pyrophosphatase in order to remove the cap structure present at the 5' ends of messenger RNAs. This reaction leaves a 5' phosphate group at the 5' end of the cap cleaved RNA which can then be ligated to an RNA oligonucleotide using T4 RNA ligase.

[0873] This modified RNA preparation is used as a template for first strand cDNA synthesis using a gene specific oligonucleotide. The first strand synthesis reaction is used as a template for PCR amplification of the desired 5' end using a primer specific to the ligated RNA oligonucleotide and a primer specific to the known sequence of the gene of interest. The resultant product is then sequenced and analyzed to confirm that the 5' end sequence belongs to the desired gene.

### ***Example 2: Isolation of Genomic Clones Corresponding to a Polynucleotide***

[0874] A human genomic P1 library (Genomic Systems, Inc.) is screened by PCR using primers selected for the sequence corresponding to SEQ ID NO:X according to the

method described in Example 1. (See also, Sambrook et al., *Molecular Cloning: A Laboratory Manual*, 2nd Edn., (1989), Cold Spring Harbor Laboratory Press).

***Example 3: Tissue specific expression analysis***

[0875] The Human Genome Sciences, Inc. (HGS) database is derived from sequencing tissue and/or disease specific cDNA libraries. Libraries generated from a particular tissue are selected and the specific tissue expression pattern of EST groups or assembled contigs within these libraries is determined by comparison of the expression patterns of those groups or contigs within the entire database. ESTs and assembled contigs which show tissue specific expression are selected.

[0876] The original clone from which the specific EST sequence was generated, or in the case of an assembled contig, the clone from which the 5' most EST sequence was generated, is obtained from the catalogued library of clones and the insert amplified by PCR using methods known in the art. The PCR product is denatured and then transferred in 96 or 384 well format to a nylon membrane (Schleicher and Schuell) generating an array filter of tissue specific clones. Housekeeping genes, maize genes, and known tissue specific genes are included on the filters. These targets can be used in signal normalization and to validate assay sensitivity. Additional targets are included to monitor probe length and specificity of hybridization.

[0877] Radioactively labeled hybridization probes are generated by first strand cDNA synthesis per the manufacturer's instructions (Life Technologies) from mRNA/RNA samples prepared from the specific tissue being analyzed (e.g., lymph node, bone marrow, bone marrow cancer, etc.). The hybridization probes are purified by gel exclusion chromatography, quantitated, and hybridized with the array filters in hybridization bottles at 65°C overnight. The filters are washed under stringent conditions and signals are captured using a Fuji phosphorimager.

[0878] Data is extracted using AIS software and following background subtraction, signal normalization is performed. This includes a normalization of filter-wide expression levels between different experimental runs. Genes that are differentially expressed in the tissue of interest are identified.

***Example 4: Chromosomal Mapping of the Polynucleotides***

[0879] An oligonucleotide primer set is designed according to the sequence at the 5' end of SEQ ID NO:X. This primer preferably spans about 100 nucleotides. This primer set is then used in a polymerase chain reaction under the following set of conditions: 30 seconds, 95°C; 1 minute, 56°C; 1 minute, 70°C. This cycle is repeated 32 times followed by one 5 minute cycle at 70°C. Human, mouse, and hamster DNA is used as template in addition to a somatic cell hybrid panel containing individual chromosomes or chromosome fragments (Bios, Inc). The reactions are analyzed on either 8% polyacrylamide gels or 3.5 % agarose gels. Chromosome mapping is determined by the presence of an approximately 100 bp PCR fragment in the particular somatic cell hybrid.

***Example 5: Bacterial Expression of a Polypeptide***

[0880] A polynucleotide encoding a polypeptide of the present invention is amplified using PCR oligonucleotide primers corresponding to the 5' and 3' ends of the DNA sequence, as outlined in Example 1, to synthesize insertion fragments. The primers used to amplify the cDNA insert should preferably contain restriction sites, such as BamHI and XbaI, at the 5' end of the primers in order to clone the amplified product into the expression vector. For example, BamHI and XbaI correspond to the restriction enzyme sites on the bacterial expression vector pQE-9. (Qiagen, Inc., Chatsworth, CA). This plasmid vector encodes antibiotic resistance (Amp<sup>r</sup>), a bacterial origin of replication (ori), an IPTG-regulatable promoter/operator (P/O), a ribosome binding site (RBS), a 6-histidine tag (6-His), and restriction enzyme cloning sites.

[0881] The pQE-9 vector is digested with BamHI and XbaI and the amplified fragment is ligated into the pQE-9 vector maintaining the reading frame initiated at the bacterial RBS. The ligation mixture is then used to transform the E. coli strain M15/rep4 (Qiagen, Inc.) which contains multiple copies of the plasmid pREP4, which expresses the lacI repressor and also confers kanamycin resistance (Kan<sup>r</sup>). Transformants are identified

by their ability to grow on LB plates and ampicillin/kanamycin resistant colonies are selected. Plasmid DNA is isolated and confirmed by restriction analysis.

[0882] Clones containing the desired constructs are grown overnight (O/N) in liquid culture in LB media supplemented with both Amp (100 ug/ml) and Kan (25 ug/ml). The O/N culture is used to inoculate a large culture at a ratio of 1:100 to 1:250. The cells are grown to an optical density 600 (O.D.<sup>600</sup>) of between 0.4 and 0.6. IPTG (Isopropyl-B-D-thiogalacto pyranoside) is then added to a final concentration of 1 mM. IPTG induces by inactivating the lacI repressor, clearing the P/O leading to increased gene expression.

[0883] Cells are grown for an extra 3 to 4 hours. Cells are then harvested by centrifugation (20 mins at 6000Xg). The cell pellet is solubilized in the chaotropic agent 6 Molar Guanidine HCl by stirring for 3-4 hours at 4°C. The cell debris is removed by centrifugation, and the supernatant containing the polypeptide is loaded onto a nickel-nitrilo-tri-acetic acid ("Ni-NTA") affinity resin column (available from QIAGEN, Inc., *supra*). Proteins with a 6 x His tag bind to the Ni-NTA resin with high affinity and can be purified in a simple one-step procedure (for details see: The QIAexpressionist (1995) QIAGEN, Inc., *supra*).

[0884] Briefly, the supernatant is loaded onto the column in 6 M guanidine-HCl, pH 8. The column is first washed with 10 volumes of 6 M guanidine-HCl, pH 8, then washed with 10 volumes of 6 M guanidine-HCl pH 6, and finally the polypeptide is eluted with 6 M guanidine-HCl, pH 5.

[0885] The purified protein is then renatured by dialyzing it against phosphate-buffered saline (PBS) or 50 mM Na-acetate, pH 6 buffer plus 200 mM NaCl. Alternatively, the protein can be successfully refolded while immobilized on the Ni-NTA column. The recommended conditions are as follows: renature using a linear 6M-1M urea gradient in 500 mM NaCl, 20% glycerol, 20 mM Tris/HCl pH 7.4, containing protease inhibitors. The renaturation should be performed over a period of 1.5 hours or more. After renaturation the proteins are eluted by the addition of 250 mM imidazole. Imidazole is removed by a final dialyzing step against PBS or 50 mM sodium acetate pH 6 buffer plus 200 mM NaCl. The purified protein is stored at 4°C or frozen at -80°C.

[0886] In addition to the above expression vector, the present invention further includes an expression vector, called pHE4a (ATCC Accession Number 209645, deposited on February 25, 1998) which contains phage operator and promoter elements

operatively linked to a polynucleotide of the present invention. This vector contains: 1) a neomycinphosphotransferase gene as a selection marker, 2) an *E. coli* origin of replication, 3) a T5 phage promoter sequence, 4) two lac operator sequences, 5) a Shine-Delgarno sequence, and 6) the lactose operon repressor gene (*lacIq*). The origin of replication (*oriC*) is derived from pUC19 (LTI, Gaithersburg, MD). The promoter and operator sequences are made synthetically.

[0887] DNA can be inserted into the pHE4a by restricting the vector with NdeI and XbaI, BamHI, XhoI, or Asp718, running the restricted product on a gel, and isolating the larger fragment (the stuffer fragment should be about 310 base pairs). The DNA insert is generated according to the PCR protocol described in Example 1, using PCR primers having restriction sites for NdeI (5' primer) and XbaI, BamHI, XhoI, or Asp718 (3' primer). The PCR insert is gel purified and restricted with compatible enzymes. The insert and vector are ligated according to standard protocols.

[0888] The engineered vector could easily be substituted in the above protocol to express protein in a bacterial system.

### ***Example 6: Purification of a Polypeptide from an Inclusion Body***

[0889] The following alternative method can be used to purify a polypeptide expressed in *E. coli* when it is present in the form of inclusion bodies. Unless otherwise specified, all of the following steps are conducted at 4-10°C.

[0890] Upon completion of the production phase of the *E. coli* fermentation, the cell culture is cooled to 4-10°C and the cells harvested by continuous centrifugation at 15,000 rpm (Heraeus Sepatech). On the basis of the expected yield of protein per unit weight of cell paste and the amount of purified protein required, an appropriate amount of cell paste, by weight, is suspended in a buffer solution containing 100 mM Tris, 50 mM EDTA, pH 7.4. The cells are dispersed to a homogeneous suspension using a high shear mixer.

[0891] The cells are then lysed by passing the solution through a microfluidizer (Microfluidics, Corp. or APV Gaulin, Inc.) twice at 4000-6000 psi. The homogenate is then mixed with NaCl solution to a final concentration of 0.5 M NaCl, followed by

centrifugation at 7000 xg for 15 min. The resultant pellet is washed again using 0.5M NaCl, 100 mM Tris, 50 mM EDTA, pH 7.4.

[0892] The resulting washed inclusion bodies are solubilized with 1.5 M guanidine hydrochloride (GuHCl) for 2-4 hours. After 7000 xg centrifugation for 15 min., the pellet is discarded and the polypeptide containing supernatant is incubated at 4°C overnight to allow further GuHCl extraction.

[0893] Following high speed centrifugation (30,000 xg) to remove insoluble particles, the GuHCl solubilized protein is refolded by quickly mixing the GuHCl extract with 20 volumes of buffer containing 50 mM sodium, pH 4.5, 150 mM NaCl, 2 mM EDTA by vigorous stirring. The refolded diluted protein solution is kept at 4°C without mixing for 12 hours prior to further purification steps.

[0894] To clarify the refolded polypeptide solution, a previously prepared tangential filtration unit equipped with 0.16 µm membrane filter with appropriate surface area (e.g., Filtron), equilibrated with 40 mM sodium acetate, pH 6.0 is employed. The filtered sample is loaded onto a cation exchange resin (e.g., Poros HS-50, Perseptive Biosystems). The column is washed with 40 mM sodium acetate, pH 6.0 and eluted with 250 mM, 500 mM, 1000 mM, and 1500 mM NaCl in the same buffer, in a stepwise manner. The absorbance at 280 nm of the effluent is continuously monitored. Fractions are collected and further analyzed by SDS-PAGE.

[0895] Fractions containing the polypeptide are then pooled and mixed with 4 volumes of water. The diluted sample is then loaded onto a previously prepared set of tandem columns of strong anion (Poros HQ-50, Perseptive Biosystems) and weak anion (Poros CM-20, Perseptive Biosystems) exchange resins. The columns are equilibrated with 40 mM sodium acetate, pH 6.0. Both columns are washed with 40 mM sodium acetate, pH 6.0, 200 mM NaCl. The CM-20 column is then eluted using a 10 column volume linear gradient ranging from 0.2 M NaCl, 50 mM sodium acetate, pH 6.0 to 1.0 M NaCl, 50 mM sodium acetate, pH 6.5. Fractions are collected under constant A<sub>280</sub> monitoring of the effluent. Fractions containing the polypeptide (determined, for instance, by 16% SDS-PAGE) are then pooled.

[0896] The resultant polypeptide should exhibit greater than 95% purity after the above refolding and purification steps. No major contaminant bands should be observed from Commassie blue stained 16% SDS-PAGE gel when 5 µg of purified protein is



loaded. The purified protein can also be tested for endotoxin/LPS contamination, and typically the LPS content is less than 0.1 ng/ml according to LAL assays.

***Example 7: Cloning and Expression of a Polypeptide in a Baculovirus  
Expression System***

[0897] In this example, the plasmid shuttle vector pA2 is used to insert a polynucleotide into a baculovirus to express a polypeptide. This expression vector contains the strong polyhedrin promoter of the *Autographa californica* nuclear polyhedrosis virus (AcMNPV) followed by convenient restriction sites such as BamHI, Xba I and Asp718. The polyadenylation site of the simian virus 40 ("SV40") is used for efficient polyadenylation. For easy selection of recombinant virus, the plasmid contains the beta-galactosidase gene from *E. coli* under control of a weak *Drosophila* promoter in the same orientation, followed by the polyadenylation signal of the polyhedrin gene. The inserted genes are flanked on both sides by viral sequences for cell-mediated homologous recombination with wild-type viral DNA to generate a viable virus that express the cloned polynucleotide.

[0898] Many other baculovirus vectors can be used in place of the vector above, such as pAc373, pVL941, and pAcIM1, as one skilled in the art would readily appreciate, as long as the construct provides appropriately located signals for transcription, translation, secretion and the like, including a signal peptide and an in-frame AUG as required. Such vectors are described, for instance, in Luckow et al., *Virology* 170:31-39 (1989).

[0899] Specifically, the cDNA sequence contained in the deposited clone, including the AUG initiation codon, is amplified using the PCR protocol described in Example 1. If a naturally occurring signal sequence is used to produce the polypeptide of the present invention, the pA2 vector does not need a second signal peptide. Alternatively, the vector can be modified (pA2 GP) to include a baculovirus leader sequence, using the standard methods described in Summers et al., "A Manual of Methods for Baculovirus Vectors and Insect Cell Culture Procedures," Texas Agricultural Experimental Station Bulletin No. 1555 (1987).

- [0900] The amplified fragment is isolated from a 1% agarose gel using a commercially available kit ("GeneClean," BIO 101 Inc., La Jolla, Ca.). The fragment then is digested with appropriate restriction enzymes and again purified on a 1% agarose gel.
- [0901] The plasmid is digested with the corresponding restriction enzymes and optionally, can be dephosphorylated using calf intestinal phosphatase, using routine procedures known in the art. The DNA is then isolated from a 1% agarose gel using a commercially available kit ("GeneClean" BIO 101 Inc., La Jolla, Ca.).
- [0902] The fragment and the dephosphorylated plasmid are ligated together with T4 DNA ligase. *E. coli* HB101 or other suitable *E. coli* hosts such as XL-1 Blue (Stratagene Cloning Systems, La Jolla, CA) cells are transformed with the ligation mixture and spread on culture plates. Bacteria containing the plasmid are identified by digesting DNA from individual colonies and analyzing the digestion product by gel electrophoresis. The sequence of the cloned fragment is confirmed by DNA sequencing.
- [0903] Five  $\mu\text{g}$  of a plasmid containing the polynucleotide is co-transfected with 1.0  $\mu\text{g}$  of a commercially available linearized baculovirus DNA ("BaculoGold™ baculovirus DNA", Pharmingen, San Diego, CA), using the lipofection method described by Felgner et al., Proc. Natl. Acad. Sci. USA 84:7413-7417 (1987). One  $\mu\text{g}$  of BaculoGold™ virus DNA and 5  $\mu\text{g}$  of the plasmid are mixed in a sterile well of a microtiter plate containing 50  $\mu\text{l}$  of serum-free Grace's medium (Life Technologies Inc., Gaithersburg, MD). Afterwards, 10  $\mu\text{l}$  Lipofectin plus 90  $\mu\text{l}$  Grace's medium are added, mixed and incubated for 15 minutes at room temperature. Then the transfection mixture is added drop-wise to Sf9 insect cells (ATCC CRL 1711) seeded in a 35 mm tissue culture plate with 1 ml Grace's medium without serum. The plate is then incubated for 5 hours at 27° C. The transfection solution is then removed from the plate and 1 ml of Grace's insect medium supplemented with 10% fetal calf serum is added. Cultivation is then continued at 27° C for four days.
- [0904] After four days the supernatant is collected and a plaque assay is performed, as described by Summers and Smith, *supra*. An agarose gel with "Blue Gal" (Life Technologies Inc., Gaithersburg) is used to allow easy identification and isolation of gal-expressing clones, which produce blue-stained plaques. (A detailed description of a "plaque assay" of this type can also be found in the user's guide for insect cell culture and baculovirology distributed by Life Technologies Inc., Gaithersburg, page 9-10.) After

appropriate incubation, blue stained plaques are picked with the tip of a micropipettor (e.g., Eppendorf). The agar containing the recombinant viruses is then resuspended in a microcentrifuge tube containing 200  $\mu$ l of Grace's medium and the suspension containing the recombinant baculovirus is used to infect Sf9 cells seeded in 35 mm dishes. Four days later the supernatants of these culture dishes are harvested and then they are stored at 4° C.

[0905] To verify the expression of the polypeptide, Sf9 cells are grown in Grace's medium supplemented with 10% heat-inactivated FBS. The cells are infected with the recombinant baculovirus containing the polynucleotide at a multiplicity of infection ("MOI") of about 2. If radiolabeled proteins are desired, 6 hours later the medium is removed and is replaced with SF900 II medium minus methionine and cysteine (available from Life Technologies Inc., Rockville, MD). After 42 hours, 5  $\mu$ Ci of  $^{35}$ S-methionine and 5  $\mu$ Ci  $^{35}$ S-cysteine (available from Amersham) are added. The cells are further incubated for 16 hours and then are harvested by centrifugation. The proteins in the supernatant as well as the intracellular proteins are analyzed by SDS-PAGE followed by autoradiography (if radiolabeled).

[0906] Microsequencing of the amino acid sequence of the amino terminus of purified protein may be used to determine the amino terminal sequence of the produced protein.

### *Example 8: Expression of a Polypeptide in Mammalian Cells*

[0907] The polypeptide of the present invention can be expressed in a mammalian cell. A typical mammalian expression vector contains a promoter element, which mediates the initiation of transcription of mRNA, a protein coding sequence, and signals required for the termination of transcription and polyadenylation of the transcript. Additional elements include enhancers, Kozak sequences and intervening sequences flanked by donor and acceptor sites for RNA splicing. Highly efficient transcription is achieved with the early and late promoters from SV40, the long terminal repeats (LTRs) from Retroviruses, e.g., RSV, HTLV1, HIV1 and the early promoter of the cytomegalovirus (CMV). However, cellular elements can also be used (e.g., the human actin promoter).

[0908] Suitable expression vectors for use in practicing the present invention include, for example, vectors such as pSVL and pMSG (Pharmacia, Uppsala, Sweden), pRSVcat

(ATCC 37152), pSV2dhfr (ATCC 37146), pBC12MI (ATCC 67109), pCMVSPORT 2.0, and pCMVSPORT 3.0. Mammalian host cells that could be used include, human Hela, 293, H9 and Jurkat cells, mouse NIH3T3 and C127 cells, Cos 1, Cos 7 and CV1, quail QC1-3 cells, mouse L cells and Chinese hamster ovary (CHO) cells.

[0909] Alternatively, the polypeptide can be expressed in stable cell lines containing the polynucleotide integrated into a chromosome. The co-transfection with a selectable marker such as DHFR, gpt, neomycin, or hygromycin allows the identification and isolation of the transfected cells.

[0910] The transfected gene can also be amplified to express large amounts of the encoded protein. The DHFR (dihydrofolate reductase) marker is useful in developing cell lines that carry several hundred or even several thousand copies of the gene of interest. (See, e.g., Alt, F. W., et al., *J. Biol. Chem.* 253:1357-1370 (1978); Hamlin, J. L. and Ma, C., *Biochem. et Biophys. Acta*, 1097:107-143 (1990); Page, M. J. and Sydenham, M. A., *Biotechnology* 9:64-68 (1991).) Another useful selection marker is the enzyme glutamine synthase (GS) (Murphy et al., *Biochem. J.* 227:277-279 (1991); Bebbington et al., *Bio/Technology* 10:169-175 (1992). Using these markers, the mammalian cells are grown in selective medium and the cells with the highest resistance are selected. These cell lines contain the amplified gene(s) integrated into a chromosome. Chinese hamster ovary (CHO) and NSO cells are often used for the production of proteins.

[0911] Derivatives of the plasmid pSV2-dhfr (ATCC Accession No. 37146), the expression vectors pC4 (ATCC Accession No. 209646) and pC6 (ATCC Accession No. 209647) contain the strong promoter (LTR) of the Rous Sarcoma Virus (Cullen et al., *Molecular and Cellular Biology*, 438-447 (March, 1985)) plus a fragment of the CMV-enhancer (Boshart et al., *Cell* 41:521-530 (1985).) Multiple cloning sites, e.g., with the restriction enzyme cleavage sites BamHI, XbaI and Asp718, facilitate the cloning of the gene of interest. The vectors also contain the 3' intron, the polyadenylation and termination signal of the rat preproinsulin gene, and the mouse DHFR gene under control of the SV40 early promoter.

[0912] Specifically, the plasmid pC6, for example, is digested with appropriate restriction enzymes and then dephosphorylated using calf intestinal phosphates by procedures known in the art. The vector is then isolated from a 1% agarose gel.

[0913] A polynucleotide of the present invention is amplified according to the protocol outlined in Example 1. If a naturally occurring signal sequence is used to produce the polypeptide of the present invention, the vector does not need a second signal peptide. Alternatively, if a naturally occurring signal sequence is not used, the vector can be modified to include a heterologous signal sequence. (See, e.g., International Publication No. WO 96/34891.)

[0914] The amplified fragment is isolated from a 1% agarose gel using a commercially available kit ("GeneClean," BIO 101 Inc., La Jolla, Ca.). The fragment then is digested with appropriate restriction enzymes and again purified on a 1% agarose gel.

[0915] The amplified fragment is then digested with the same restriction enzyme and purified on a 1% agarose gel. The isolated fragment and the dephosphorylated vector are then ligated with T4 DNA ligase. *E. coli* HB101 or XL-1 Blue cells are then transformed and bacteria are identified that contain the fragment inserted into plasmid pC6 using, for instance, restriction enzyme analysis.

[0916] Chinese hamster ovary cells lacking an active DHFR gene is used for transfection. Five  $\mu$ g of the expression plasmid pC6 or pC4 is cotransfected with 0.5  $\mu$ g of the plasmid pSVneo using lipofectin (Felgner et al., *supra*). The plasmid pSV2-neo contains a dominant selectable marker, the *neo* gene from Tn5 encoding an enzyme that confers resistance to a group of antibiotics including G418. The cells are seeded in alpha minus MEM supplemented with 1 mg/ml G418. After 2 days, the cells are trypsinized and seeded in hybridoma cloning plates (Greiner, Germany) in alpha minus MEM supplemented with 10, 25, or 50 ng/ml of methotrexate plus 1 mg/ml G418. After about 10-14 days single clones are trypsinized and then seeded in 6-well petri dishes or 10 ml flasks using different concentrations of methotrexate (50 nM, 100 nM, 200 nM, 400 nM, 800 nM). Clones growing at the highest concentrations of methotrexate are then transferred to new 6-well plates containing even higher concentrations of methotrexate (1  $\mu$ M, 2  $\mu$ M, 5  $\mu$ M, 10 mM, 20 mM). The same procedure is repeated until clones are obtained which grow at a concentration of 100 - 200  $\mu$ M. Expression of the desired gene product is analyzed, for instance, by SDS-PAGE and Western blot or by reversed phase HPLC analysis.

### *Example 9: Protein Fusions*

[0917] The polypeptides of the present invention are preferably fused to other proteins. These fusion proteins can be used for a variety of applications. For example, fusion of the present polypeptides to His-tag, HA-tag, protein A, IgG domains, and maltose binding protein facilitates purification. (See Example 5; see also EP A 394,827; Traunecker, et al., Nature 331:84-86 (1988).) Similarly, fusion to IgG-1, IgG-3, and albumin increases the half-life time *in vivo*. Nuclear localization signals fused to the polypeptides of the present invention can target the protein to a specific subcellular localization, while covalent heterodimer or homodimers can increase or decrease the activity of a fusion protein. Fusion proteins can also create chimeric molecules having more than one function. Finally, fusion proteins can increase solubility and/or stability of the fused protein compared to the non-fused protein. All of the types of fusion proteins described above can be made by modifying the following protocol, which outlines the fusion of a polypeptide to an IgG molecule, or the protocol described in Example 5.

[0918] Briefly, the human Fc portion of the IgG molecule can be PCR amplified, using primers that span the 5' and 3' ends of the sequence described below. These primers also should have convenient restriction enzyme sites that will facilitate cloning into an expression vector, preferably a mammalian expression vector.

[0919] For example, if pC4 (ATCC Accession No. 209646) is used, the human Fc portion can be ligated into the BamHI cloning site. Note that the 3' BamHI site should be destroyed. Next, the vector containing the human Fc portion is re-restricted with BamHI, linearizing the vector, and a polynucleotide of the present invention, isolated by the PCR protocol described in Example 1, is ligated into this BamHI site. Note that the polynucleotide is cloned without a stop codon, otherwise a fusion protein will not be produced.

[0920] If the naturally occurring signal sequence is used to produce the polypeptide of the present invention, pC4 does not need a second signal peptide. Alternatively, if the naturally occurring signal sequence is not used, the vector can be modified to include a heterologous signal sequence. (See, e.g., International Publication No. WO 96/34891.)

Human IgG Fc region:

GGGATCCGGAGCCCAAATCTTCTGACAAAACCTCACACATGCCACCGTGCCC  
 AGCACCTGAATTCGAGGGTGCACCGTCAGTCTTCTCTTCCCCCAAAACCCA  
 AGGACACCCTCATGATCTCCCGGACTCCTGAGGTACATGCGTGGTGGTGGAC  
 GTAAGCCACGAAGACCCTGAGGTCAAGTTCAACTGGTACGTGGACGGCGTGG  
 AGGTGCATAATGCCAAGACAAAGCCGCGGGAGGAGCAGTACAACAGCACGTA  
 CCGTGTGGTCAGCGTCTCTACCGTCTGCACCAGGACTGGCTGAATGGCAAGG  
 AGTACAAGTGCAAGGTCTCCAACAAAGCCCTCCCAACCCCATCGAGAAAAC  
 CATCTCCAAAGCCAAAGGGCAGCCCCGAGAACCACAGGTGTACACCTGCCCC  
 CCATCCCGGGATGAGCTGACCAAGAACCAGGTACAGCTGACCTGCCTGGTCA  
 AAGGCTTCTATCCAAGCGACATCGCCGTGGAGTGGGAGAGCAATGGGACGCC  
 GGAGAAACAACTACAAGACCACGCCTCCCGTGTGGACTCCGACGGCTCCTTCT  
 TCCTCTACAGCAAGCTACCGTGGACAAGAGCAGGTGGCAGCAGGGGAACGT  
 CTTCTCATGCTCCGTGATGCATGAGGCTCTGCACAACCACTACACGCAGAAGA  
 GCCTCTCCCTGTCTCCGGGTAAATGAGTGCGACGGCCGCGACTCTAGAGGAT  
 (SEQ ID NO: 1)

### *Example 10: Production of an Antibody from a Polypeptide*

#### *Hybridoma Technology*

[0921] The antibodies of the present invention can be prepared by a variety of methods. (See, Current Protocols, Chapter 2.) As one example of such methods, cells expressing polypeptide of the present invention are administered to an animal to induce the production of sera containing polyclonal antibodies. In a preferred method, a preparation of polypeptide of the present invention is prepared and purified to render it substantially free of natural contaminants. Such a preparation is then introduced into an animal in order to produce polyclonal antisera of greater specific activity.

[0922] Monoclonal antibodies specific for polypeptide of the present invention are prepared using hybridoma technology (Kohler et al., Nature 256:495 (1975); Kohler et al., Eur. J. Immunol. 6:511 (1976); Kohler et al., Eur. J. Immunol. 6:292 (1976); Hammerling et al., in: Monoclonal Antibodies and T-Cell Hybridomas, Elsevier, N.Y., pp. 563-681 (1981)). In general, an animal (preferably a mouse) is immunized with polypeptide of the present invention or, more preferably, with a secreted polypeptide of

the present invention-expressing cell. Such polypeptide-expressing cells are cultured in any suitable tissue culture medium, preferably in Earle's modified Eagle's medium supplemented with 10% fetal bovine serum (inactivated at about 56°C), and supplemented with about 10 g/l of nonessential amino acids, about 1,000 U/ml of penicillin, and about 100 µg/ml of streptomycin.

[0923] The splenocytes of such mice are extracted and fused with a suitable myeloma cell line. Any suitable myeloma cell line may be employed in accordance with the present invention; however, it is preferable to employ the parent myeloma cell line (SP2O), available from the ATCC. After fusion, the resulting hybridoma cells are selectively maintained in HAT medium, and then cloned by limiting dilution as described by Wands et al. (Gastroenterology 80:225-232 (1981)). The hybridoma cells obtained through such a selection are then assayed to identify clones which secrete antibodies capable of binding the polypeptide of the present invention.

[0924] Alternatively, additional antibodies capable of binding to polypeptide of the present invention can be produced in a two-step procedure using anti-idiotypic antibodies. Such a method makes use of the fact that antibodies are themselves antigens, and therefore, it is possible to obtain an antibody which binds to a second antibody. In accordance with this method, protein specific antibodies are used to immunize an animal, preferably a mouse. The splenocytes of such an animal are then used to produce hybridoma cells, and the hybridoma cells are screened to identify clones which produce an antibody whose ability to bind to the polypeptide of the present invention-specific antibody can be blocked by polypeptide of the present invention. Such antibodies comprise anti-idiotypic antibodies to the polypeptide of the present invention-specific antibody and are used to immunize an animal to induce formation of further polypeptide of the present invention-specific antibodies.

[0925] For *in vivo* use of antibodies in humans, an antibody is "humanized". Such antibodies can be produced using genetic constructs derived from hybridoma cells producing the monoclonal antibodies described above. Methods for producing chimeric and humanized antibodies are known in the art and are discussed herein. (See, for review, Morrison, Science 229:1202 (1985); Oi et al., BioTechniques 4:214 (1986); Cabilly et al., U.S. Patent No. 4,816,567; Taniguchi et al., EP 171496; Morrison et al., EP 173494; Neuberger et al., WO 8601533; Robinson et al., International Publication No. WO



8702671; Boulianne et al., Nature 312:643 (1984); Neuberger et al., Nature 314:268 (1985).)

*Isolation Of Antibody Fragments Directed Against Polypeptide of the Present Invention From A Library Of scFvs*

[0926] Naturally occurring V-genes isolated from human PBLs are constructed into a library of antibody fragments which contain reactivities against polypeptide of the present invention to which the donor may or may not have been exposed (see e.g., U.S. Patent 5,885,793 incorporated herein by reference in its entirety).

[0927] *Rescue of the Library.* A library of scFvs is constructed from the RNA of human PBLs as described in International Publication No. WO 92/01047. To rescue phage displaying antibody fragments, approximately  $10^9$  *E. coli* harboring the phagemid are used to inoculate 50 ml of 2xTY containing 1% glucose and 100 µg/ml of ampicillin (2xTY-AMP-GLU) and grown to an O.D. of 0.8 with shaking. Five ml of this culture is used to inoculate 50 ml of 2xTY-AMP-GLU,  $2 \times 10^8$  TU of delta gene 3 helper (M13 delta gene III, see International Publication No. WO 92/01047) are added and the culture incubated at 37°C for 45 minutes without shaking and then at 37°C for 45 minutes with shaking. The culture is centrifuged at 4000 r.p.m. for 10 min. and the pellet resuspended in 2 liters of 2xTY containing 100 µg/ml ampicillin and 50 µg/ml kanamycin and grown overnight. Phage are prepared as described in International Application No. WO 92/01047.

[0928] M13 delta gene III is prepared as follows: M13 delta gene III helper phage does not encode gene III protein, hence the phage(mid) displaying antibody fragments have a greater avidity of binding to antigen. Infectious M13 delta gene III particles are made by growing the helper phage in cells harboring a pUC19 derivative supplying the wild type gene III protein during phage morphogenesis. The culture is incubated for 1 hour at 37°C without shaking and then for a further hour at 37°C with shaking. Cells are spun down (IEC-Centra 8,400 r.p.m. for 10 min), resuspended in 300 ml 2xTY broth containing 100 µg ampicillin/ml and 25 µg kanamycin/ml (2xTY-AMP-KAN) and grown overnight, shaking at 37°C. Phage particles are purified and concentrated from the culture medium by two PEG-precipitations (Sambrook et al., 1990), resuspended in 2 ml PBS and

passed through a 0.45  $\mu\text{m}$  filter (Minisart NML; Sartorius) to give a final concentration of approximately  $10^{13}$  transducing units/ml (ampicillin-resistant clones).

**[0929]**      *Panning of the Library.* Immunotubes (Nunc) are coated overnight in PBS with 4 ml of either 100  $\mu\text{g/ml}$  or 10  $\mu\text{g/ml}$  of a polypeptide of the present invention. Tubes are blocked with 2% Marvel-PBS for 2 hours at 37°C and then washed 3 times in PBS. Approximately  $10^{13}$  TU of phage is applied to the tube and incubated for 30 minutes at room temperature tumbling on an over and under turntable and then left to stand for another 1.5 hours. Tubes are washed 10 times with PBS 0.1% Tween-20 and 10 times with PBS. Phage are eluted by adding 1 ml of 100 mM triethylamine and rotating 15 minutes on an under and over turntable after which the solution is immediately neutralized with 0.5 ml of 1.0M Tris-HCl, pH 7.4. Phage are then used to infect 10 ml of mid-log E. coli TG1 by incubating eluted phage with bacteria for 30 minutes at 37°C. The E. coli are then plated on TYE plates containing 1% glucose and 100  $\mu\text{g/ml}$  ampicillin. The resulting bacterial library is then rescued with delta gene 3 helper phage as described above to prepare phage for a subsequent round of selection. This process is then repeated for a total of 4 rounds of affinity purification with tube-washing increased to 20 times with PBS, 0.1% Tween-20 and 20 times with PBS for rounds 3 and 4.

**[0930]**      *Characterization of Binders.* Eluted phage from the 3rd and 4th rounds of selection are used to infect E. coli HB 2151 and soluble scFv is produced (Marks, et al., 1991) from single colonies for assay. ELISAs are performed with microtitre plates coated with 10  $\text{pg/ml}$  of the polypeptide of the present invention in 50 mM bicarbonate pH 9.6. Clones positive in ELISA are further characterized by PCR fingerprinting (see, e.g., International Application No. WO 92/01047) and then by sequencing. These ELISA positive clones may also be further characterized by techniques known in the art, such as, for example, epitope mapping, binding affinity, receptor signal transduction, ability to block or competitively inhibit antibody/antigen binding, and competitive agonistic or antagonistic activity.

***Example 11: Method of Determining Alterations in a Gene Corresponding to a Polynucleotide***

- [0931] RNA isolated from entire families or individual patients presenting with a phenotype of interest (such as a disease) is isolated. cDNA is then generated from these RNA samples using protocols known in the art. (See, Sambrook.) The cDNA is then used as a template for PCR, employing primers surrounding regions of interest in SEQ ID NO:X; and/or the nucleotide sequence of the cDNA contained in Clone ID NO:Z. Suggested PCR conditions consist of 35 cycles at 95 degrees C for 30 seconds; 60-120 seconds at 52-58 degrees C; and 60-120 seconds at 70 degrees C, using buffer solutions described in Sidransky et al., Science 252:706 (1991).
- [0932] PCR products are then sequenced using primers labeled at their 5' end with T4 polynucleotide kinase, employing SequiTherm Polymerase (Epicentre Technologies). The intron-exon boundaries of selected exons is also determined and genomic PCR products analyzed to confirm the results. PCR products harboring suspected mutations are then cloned and sequenced to validate the results of the direct sequencing.
- [0933] PCR products are cloned into T-tailed vectors as described in Holton et al., Nucleic Acids Research, 19:1156 (1991) and sequenced with T7 polymerase (United States Biochemical). Affected individuals are identified by mutations not present in unaffected individuals.
- [0934] Genomic rearrangements are also observed as a method of determining alterations in a gene corresponding to a polynucleotide. Genomic clones isolated according to Example 2 are nick-translated with digoxigenin deoxy-uridine 5'-triphosphate (Boehringer Mannheim), and FISH performed as described in Johnson et al., Methods Cell Biol. 35:73-99 (1991). Hybridization with the labeled probe is carried out using a vast excess of human cot-1 DNA for specific hybridization to the corresponding genomic locus.
- [0935] Chromosomes are counterstained with 4,6-diamino-2-phenylidole and propidium iodide, producing a combination of C- and R-bands. Aligned images for precise mapping are obtained using a triple-band filter set (Chroma Technology, Brattleboro, VT) in combination with a cooled charge-coupled device camera

(Photometrics, Tucson, AZ) and variable excitation wavelength filters. (Johnson et al., Genet. Anal. Tech. Appl., 8:75 (1991).) Image collection, analysis and chromosomal fractional length measurements are performed using the ISee Graphical Program System. (Inovision Corporation, Durham, NC.) Chromosome alterations of the genomic region hybridized by the probe are identified as insertions, deletions, and translocations. These alterations are used as a diagnostic marker for an associated disease.

***Example 12: Method of Detecting Abnormal Levels of a Polypeptide in a Biological Sample***

[0936] A polypeptide of the present invention can be detected in a biological sample, and if an increased or decreased level of the polypeptide is detected, this polypeptide is a marker for a particular phenotype. Methods of detection are numerous, and thus, it is understood that one skilled in the art can modify the following assay to fit their particular needs.

[0937] For example, antibody-sandwich ELISAs are used to detect polypeptides in a sample, preferably a biological sample. Wells of a microtiter plate are coated with specific antibodies, at a final concentration of 0.2 to 10 ug/ml. The antibodies are either monoclonal or polyclonal and are produced by the method described in Example 10. The wells are blocked so that non-specific binding of the polypeptide to the well is reduced.

[0938] The coated wells are then incubated for > 2 hours at RT with a sample containing the polypeptide. Preferably, serial dilutions of the sample should be used to validate results. The plates are then washed three times with deionized or distilled water to remove unbound polypeptide.

[0939] Next, 50 ul of specific antibody-alkaline phosphatase conjugate, at a concentration of 25-400 ng, is added and incubated for 2 hours at room temperature. The plates are again washed three times with deionized or distilled water to remove unbound conjugate.

[0940] Add 75 ul of 4-methylumbelliferyl phosphate (MUP) or p-nitrophenyl phosphate (NPP) substrate solution to each well and incubate 1 hour at room temperature. Measure the reaction by a microtiter plate reader. Prepare a standard curve, using serial

dilutions of a control sample, and plot polypeptide concentration on the X-axis (log scale) and fluorescence or absorbance of the Y-axis (linear scale). Interpolate the concentration of the polypeptide in the sample using the standard curve.

### *Example 13: Formulations*

[0941] The invention also provides methods of treatment and/or prevention of diseases or disorders (such as, for example, any one or more of the diseases or disorders disclosed herein) by administration to a subject of an effective amount of a Therapeutic. By therapeutic is meant polynucleotides or polypeptides of the invention (including fragments and variants), agonists or antagonists thereof, and/or antibodies thereto, in combination with a pharmaceutically acceptable carrier type (e.g., a sterile carrier).

[0942] The Therapeutic will be formulated and dosed in a fashion consistent with good medical practice, taking into account the clinical condition of the individual patient (especially the side effects of treatment with the Therapeutic alone), the site of delivery, the method of administration, the scheduling of administration, and other factors known to practitioners. The "effective amount" for purposes herein is thus determined by such considerations.

[0943] As a general proposition, the total pharmaceutically effective amount of the Therapeutic administered parenterally per dose will be in the range of about 1 µg/kg/day to 10 mg/kg/day of patient body weight, although, as noted above, this will be subject to therapeutic discretion. More preferably, this dose is at least 0.01 mg/kg/day, and most preferably for humans between about 0.01 and 1 mg/kg/day for the hormone. If given continuously, the Therapeutic is typically administered at a dose rate of about 1 µg/kg/hour to about 50 µg/kg/hour, either by 1-4 injections per day or by continuous subcutaneous infusions, for example, using a mini-pump. An intravenous bag solution may also be employed. The length of treatment needed to observe changes and the interval following treatment for responses to occur appears to vary depending on the desired effect.

[0944] Therapeutics can be administered orally, rectally, parenterally, intracisternally, intravaginally, intraperitoneally, topically (as by powders, ointments, gels, drops or transdermal patch), buccally, or as an oral or nasal spray. "Pharmaceutically

acceptable carrier" refers to a non-toxic solid, semisolid or liquid filler, diluent, encapsulating material or formulation auxiliary of any. The term "parenteral" as used herein refers to modes of administration which include intravenous, intramuscular, intraperitoneal, intrasternal, subcutaneous and intraarticular injection and infusion.

[0945] Therapeutics of the invention are also suitably administered by sustained-release systems. Suitable examples of sustained-release Therapeutics are administered orally, rectally, parenterally, intracisternally, intravaginally, intraperitoneally, topically (as by powders, ointments, gels, drops or transdermal patch), buccally, or as an oral or nasal spray. "Pharmaceutically acceptable carrier" refers to a non-toxic solid, semisolid or liquid filler, diluent, encapsulating material or formulation auxiliary of any type. The term "parenteral" as used herein refers to modes of administration which include intravenous, intramuscular, intraperitoneal, intrasternal, subcutaneous and intraarticular injection and infusion.

[0946] Therapeutics of the invention are also suitably administered by sustained-release systems. Suitable examples of sustained-release Therapeutics include suitable polymeric materials (such as, for example, semi-permeable polymer matrices in the form of shaped articles, e.g., films, or microcapsules), suitable hydrophobic materials (for example as an emulsion in an acceptable oil) or ion exchange resins, and sparingly soluble derivatives (such as, for example, a sparingly soluble salt).

[0947] Sustained-release matrices include polylactides (U.S. Pat. No. 3,773,919, EP 58,481), copolymers of L-glutamic acid and gamma-ethyl-L-glutamate (Sidman et al., *Biopolymers* 22:547-556 (1983)), poly (2- hydroxyethyl methacrylate) (Langer et al., *J. Biomed. Mater. Res.* 15:167-277 (1981), and Langer, *Chem. Tech.* 12:98-105 (1982)), ethylene vinyl acetate (Langer et al., *Id.*) or poly-D- (-)-3-hydroxybutyric acid (EP 133,988).

[0948] Sustained-release Therapeutics also include liposomally entrapped Therapeutics of the invention (*see* generally, Langer, *Science* 249:1527-1533 (1990); Treat et al., in *Liposomes in the Therapy of Infectious Disease and Cancer*, Lopez-Berestein and Fidler (eds.), Liss, New York, pp. 317 -327 and 353-365 (1989)). Liposomes containing the Therapeutic are prepared by methods known per se: DE 3,218,121; Epstein et al., *Proc. Natl. Acad. Sci. (USA)* 82:3688-3692 (1985); Hwang et al., *Proc. Natl. Acad. Sci. (USA)* 77:4030-4034 (1980); EP 52,322; EP 36,676; EP 88,046;

EP 143,949; EP 142,641; Japanese Pat. Appl. 83-118008; U.S. Pat. Nos. 4,485,045 and 4,544,545; and EP 102,324. Ordinarily, the liposomes are of the small (about 200-800 Angstroms) unilamellar type in which the lipid content is greater than about 30 mol. percent cholesterol, the selected proportion being adjusted for the optimal Therapeutic.

[0949] In yet an additional embodiment, the Therapeutics of the invention are delivered by way of a pump (*see* Langer, *supra*; Sefton, CRC Crit. Ref. Biomed. Eng. 14:201 (1987); Buchwald et al., Surgery 88:507 (1980); Saudek et al., N. Engl. J. Med. 321:574 (1989)).

[0950] Other controlled release systems are discussed in the review by Langer (*Science* 249:1527-1533 (1990)).

[0951] For parenteral administration, in one embodiment, the Therapeutic is formulated generally by mixing it at the desired degree of purity, in a unit dosage injectable form (solution, suspension, or emulsion), with a pharmaceutically acceptable carrier, i.e., one that is non-toxic to recipients at the dosages and concentrations employed and is compatible with other ingredients of the formulation. For example, the formulation preferably does not include oxidizing agents and other compounds that are known to be deleterious to the Therapeutic.

[0952] Generally, the formulations are prepared by contacting the Therapeutic uniformly and intimately with liquid carriers or finely divided solid carriers or both. Then, if necessary, the product is shaped into the desired formulation. Preferably the carrier is a parenteral carrier, more preferably a solution that is isotonic with the blood of the recipient. Examples of such carrier vehicles include water, saline, Ringer's solution, and dextrose solution. Non-aqueous vehicles such as fixed oils and ethyl oleate are also useful herein, as well as liposomes.

[0953] The carrier suitably contains minor amounts of additives such as substances that enhance isotonicity and chemical stability. Such materials are non-toxic to recipients at the dosages and concentrations employed, and include buffers such as phosphate, citrate, succinate, acetic acid, and other organic acids or their salts; antioxidants such as ascorbic acid; low molecular weight (less than about ten residues) polypeptides, e.g., polyarginine or tripeptides; proteins, such as serum albumin, gelatin, or immunoglobulins; hydrophilic polymers such as polyvinylpyrrolidone; amino acids, such as glycine, glutamic acid, aspartic acid, or arginine; monosaccharides, disaccharides, and other

carbohydrates including cellulose or its derivatives, glucose, manose, or dextrans; chelating agents such as EDTA; sugar alcohols such as mannitol or sorbitol; counterions such as sodium; and/or nonionic surfactants such as polysorbates, poloxamers, or PEG.

[0954] The Therapeutic is typically formulated in such vehicles at a concentration of about 0.1 mg/ml to 100 mg/ml, preferably 1-10 mg/ml, at a pH of about 3 to 8. It will be understood that the use of certain of the foregoing excipients, carriers, or stabilizers will result in the formation of polypeptide salts.

[0955] Any pharmaceutical used for therapeutic administration can be sterile. Sterility is readily accomplished by filtration through sterile filtration membranes (e.g., 0.2 micron membranes). Therapeutics generally are placed into a container having a sterile access port, for example, an intravenous solution bag or vial having a stopper pierceable by a hypodermic injection needle.

[0956] Therapeutics ordinarily will be stored in unit or multi-dose containers, for example, sealed ampoules or vials, as an aqueous solution or as a lyophilized formulation for reconstitution. As an example of a lyophilized formulation, 10-ml vials are filled with 5 ml of sterile-filtered 1% (w/v) aqueous Therapeutic solution, and the resulting mixture is lyophilized. The infusion solution is prepared by reconstituting the lyophilized Therapeutic using bacteriostatic Water-for-Injection.

[0957] The invention also provides a pharmaceutical pack or kit comprising one or more containers filled with one or more of the ingredients of the Therapeutics of the invention. Associated with such container(s) can be a notice in the form prescribed by a governmental agency regulating the manufacture, use or sale of pharmaceuticals or biological products, which notice reflects approval by the agency of manufacture, use or sale for human administration. In addition, the Therapeutics may be employed in conjunction with other therapeutic compounds.

[0958] The Therapeutics of the invention may be administered alone or in combination with adjuvants. Adjuvants that may be administered with the Therapeutics of the invention include, but are not limited to, alum, alum plus deoxycholate (ImmunoAg), MTP-PE (Biocine Corp.), QS21 (Genentech, Inc.), BCG (e.g., THERACYS®), MPL and nonviable preparations of *Corynebacterium parvum*. In a specific embodiment, Therapeutics of the invention are administered in combination with alum. In another specific embodiment, Therapeutics of the invention are administered in combination with



QS-21. Further adjuvants that may be administered with the Therapeutics of the invention include, but are not limited to, Monophosphoryl lipid immunomodulator, AdjuVax 100a, QS-21, QS-18, CRL1005, Aluminum salts, MF-59, and Virosomal adjuvant technology. Vaccines that may be administered with the Therapeutics of the invention include, but are not limited to, vaccines directed toward protection against MMR (measles, mumps, rubella), polio, varicella, tetanus/diphtheria, hepatitis A, hepatitis B, haemophilus influenzae B, whooping cough, pneumonia, influenza, Lyme's Disease, rotavirus, cholera, yellow fever, Japanese encephalitis, poliomyelitis, rabies, typhoid fever, and pertussis. Combinations may be administered either concomitantly, e.g., as an admixture, separately but simultaneously or concurrently; or sequentially. This includes presentations in which the combined agents are administered together as a therapeutic mixture, and also procedures in which the combined agents are administered separately but simultaneously, e.g., as through separate intravenous lines into the same individual. Administration "in combination" further includes the separate administration of one of the compounds or agents given first, followed by the second.

[0959] The Therapeutics of the invention may be administered alone or in combination with other therapeutic agents. Therapeutic agents that may be administered in combination with the Therapeutics of the invention include, but are not limited to, immunostimulants, immunosuppressants, antiviral agents, antiretroviral agents, anti-opportunistic infection agents, members of the TNF family, hematopoietic growth factors, antibiotics, steroidal and non-steroidal anti-inflammatories, conventional immunotherapeutic agents, chemotherapeutic agents, and cytokines and/or growth factors. Combinations may be administered either concomitantly, e.g., as an admixture, separately but simultaneously or concurrently; or sequentially. This includes presentations in which the combined agents are administered together as a therapeutic mixture, and also procedures in which the combined agents are administered separately but simultaneously, e.g., as through separate intravenous lines into the same individual. Administration "in combination" further includes the separate administration of one of the compounds or agents given first, followed by the second.

[0960] In a preferred embodiment, the Therapeutics of the invention are administered in combination with immunostimulants. Immunostimulants that may be administered in combination with the Therapeutics of the invention include, but are not limited to,

levamisole (e.g., ERGAMISOL™), isoprinosine (e.g. INOSIPLEX™), interferons (e.g. interferon alpha), and interleukins (e.g., IL-2).

[0961] In another preferred embodiment, Therapeutics of the invention are administered in combination with immunosuppressive agents. Immunosuppressive agents that may be administered in combination with the Therapeutics of the invention include, but are not limited to, steroids, cyclosporine, cyclosporine analogs, cyclophosphamide, methylprednisone, prednisone, azathioprine, FK-506, 15-deoxyspergualin, and other immunosuppressive agents that act by suppressing the function of responding T cells. Other immunosuppressive agents that may be administered in combination with the Therapeutics of the invention include, but are not limited to, prednisolone, methotrexate, thalidomide, methoxsalen, rapamycin, leflunomide, mizoribine (BREDININ™), brequinar, deoxyspergualin, and azaspirane (SKF 105685), ORTHOCLONE OKT® 3 (muromonab-CD3), SANDIMMUNE™, NEORAL™, SANGDYA™ (cyclosporine), PROGRAF® (FK506, tacrolimus), CELLCEPT® (mycophenolate mofetil, of which the active metabolite is mycophenolic acid), IMURANT™ (azathioprine), glucocorticosteroids, adrenocortical steroids such as DELTASONE™ (prednisone) and HYDELTRASOL™ (prednisolone), FOLEX™ and MEXATE™ (methotrexate), OXSORALEN-ULTRA™ (methoxsalen) and RAPAMUNE™ (sirolimus). In a specific embodiment, immunosuppressants may be used to prevent rejection of organ or bone marrow transplantation.

[0962] In another preferred embodiment, Therapeutics of the invention are administered alone or in combination with one or more intravenous immune globulin preparations. Intravenous immune globulin preparations that may be administered with the Therapeutics of the invention include, but are not limited to, GAMMAR™, IVEEGAM™, SANDOGLOBULIN™, GAMMAGARD S/D™, ATGAM™ (antithymocyte globulin), and GAMIMUNE™. In a specific embodiment, Therapeutics of the invention are administered in combination with intravenous immune globulin preparations in transplantation therapy (e.g., bone marrow transplant).

[0963] In another preferred embodiment, the Therapeutics of the invention are administered alone or in combination with anti-inflammatory agents. Anti-inflammatory agents that may be administered with the Therapeutics of the invention include, but are not limited to, corticosteroids (e.g. betamethasone, budesonide, cortisone, dexamethasone,

hydrocortisone, methylprednisolone, prednisolone, prednisone, and triamcinolone), nonsteroidal anti-inflammatory drugs (e.g., diclofenac, diflunisal, etodolac, fenoprofen, floctafenine, flurbiprofen, ibuprofen, indomethacin, ketoprofen, meclofenamate, mefenamic acid, meloxicam, nabumetone, naproxen, oxaprozin, phenylbutazone, piroxicam, sulindac, tenoxicam, tiaprofenic acid, and tolmetin.), as well as antihistamines, aminoarylcarboxylic acid derivatives, arylacetic acid derivatives, arylbutyric acid derivatives, arylcarboxylic acids, arylpropionic acid derivatives, pyrazoles, pyrazolones, salicylic acid derivatives, thiazinecarboxamides, e-acetamidocaproic acid, S-adenosylmethionine, 3-amino-4-hydroxybutyric acid, amixetrine, bendazac, benzydamine, bucolome, difenpiramide, ditazol, emorfazone, guaiazulene, nabumetone, nimesulide, orgotein, oxaceprol, paranyline, perisoxal, pifoxime, proquazone, proxazole, and tenidap.

[0964] In another preferred embodiment, the Therapeutics of the invention are administered in combination with hematopoietic growth factors. Hematopoietic growth factors that may be administered with the Therapeutics of the invention include, but are not limited to, granulocyte macrophage colony stimulating factor (GM-CSF) (sargramostim, LEUKINET™, PROKINET™), granulocyte colony stimulating factor (G-CSF) (filgrastim, NEUPOGEN™), macrophage colony stimulating factor (M-CSF, CSF-1) erythropoietin (epoetin alfa, EPOGEN™, PROCIT™), stem cell factor (SCF, c-kit ligand, steel factor), megakaryocyte colony stimulating factor, PIXY321 (a GMCSF/IL-3 fusion protein), interleukins, especially any one or more of IL-1 through IL-12, interferon-gamma, or thrombopoietin.

[0965] In another preferred embodiment, the Therapeutics of the invention are administered in combination with members of the TNF family. TNF, TNF-related or TNF-like molecules that may be administered in combination with the Therapeutics of the invention include, but are not limited to, soluble forms of TNF-alpha, lymphotoxin-alpha (LT-alpha, also known as TNF-beta), LT-beta (found in complex heterotrimer LT-alpha2-beta), OPGL, FasL, CD27L, CD30L, CD40L, 4-1BBL, DcR3, OX40L, TNF-gamma (International Publication No. WO 96/14328), AIM-I (International Publication No. WO 97/33899), endokine-alpha (International Publication No. WO 98/07880), TR6 (International Publication No. WO 98/30694), OPG, and neutrokin-alpha (International Publication No. WO 98/18921, OX40, and nerve growth factor (NGF), and soluble forms of Fas, CD30, CD27, CD40 and 4-1BB, TR2 (International Publication No. WO

96/34095), DR3 (International Publication No. WO 97/33904), DR4 (International Publication No. WO 98/32856), TR5 (International Publication No. WO 98/30693), TR6 (International Publication No. WO 98/30694), TR7 (International Publication No. WO 98/41629), TRANK, TR9 (International Publication No. WO 98/56892), TR10 (International Publication No. WO 98/54202), 312C2 (International Publication No. WO 98/06842), and TR12, and soluble forms CD154, CD70, and CD153.

[0966] In additional preferred embodiments, Therapeutics of the invention are administered in combination with antiretroviral agents, nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs), non-nucleoside reverse transcriptase inhibitors (NNRTIs), and/or protease inhibitors (PIs). NRTIs that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, RETROVIR™ (zidovudine/AZT), VIDEX™ (didanosine/ddI), HIVID™ (zalcitabine/ddC), ZERIT™ (stavudine/d4T), EPIVIR™ (lamivudine/3TC), and COMBIVIR™ (zidovudine/lamivudine). NNRTIs that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, VIRAMUNE™ (nevirapine), RESCRIPTOR™ (delavirdine), and SUSTIVA™ (efavirenz). Protease inhibitors that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, CRIXIVAN™ (indinavir), NORVIR™ (ritonavir), INVIRASE™ (saquinavir), and VIRACEPT™ (nelfinavir). In a specific embodiment, antiretroviral agents, nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, and/or protease inhibitors may be used in any combination with Therapeutics of the invention to treat AIDS and/or to prevent or treat HIV infection.

[0967] Additional NRTIs include LODENOSINE™ (F-ddA; an acid-stable adenosine NRTI; Triangle/Abbott; COVIRACIL™ (emtricitabine/FTC; structurally related to lamivudine (3TC) but with 3- to 10-fold greater activity *in vitro*; Triangle/Abbott); dOTC (BCH-10652, also structurally related to lamivudine but retains activity against a substantial proportion of lamivudine-resistant isolates; Biochem Pharma); Adefovir (refused approval for anti-HIV therapy by FDA; Gilead Sciences); PREVEON® (Adefovir Dipivoxil, the active prodrug of adefovir; its active form is PMEA-pp); TENOFOVIR™ (bis-POC PMPA, a PMPA prodrug; Gilead); DAPD/DXG (active metabolite of DAPD; Triangle/Abbott); D-D4FC (related to 3TC, with activity against

AZT/3TC-resistant virus); GW420867X (Glaxo Wellcome); ZIAGEN™ (abacavir/159U89; Glaxo Wellcome Inc.); CS-87 (3'-azido-2',3'-dideoxyuridine; WO 99/66936); and S-acyl-2-thioethyl (SATE)-bearing prodrug forms of  $\beta$ -L-FD4C and  $\beta$ -L-FddC (WO 98/17281).

[0968] Additional NNRTIs include COACTINON™ (Emivirine/MKC-442, potent NNRTI of the HEPT class; Triangle/Abbott); CAPRAVIRINE™ (AG-1549/S-1153, a next generation NNRTI with activity against viruses containing the K103N mutation; Agouron); PNU-142721 (has 20- to 50-fold greater activity than its predecessor delavirdine and is active against K103N mutants; Pharmacia & Upjohn); DPC-961 and DPC-963 (second-generation derivatives of efavirenz, designed to be active against viruses with the K103N mutation; DuPont); GW-420867X (has 25-fold greater activity than HBY097 and is active against K103N mutants; Glaxo Wellcome); CALANOLIDE A (naturally occurring agent from the latex tree; active against viruses containing either or both the Y181C and K103N mutations); and Propolis (WO 99/49830).

[0969] Additional protease inhibitors include LOPINAVIR™ (ABT378/r; Abbott Laboratories); BMS-232632 (an azapeptide; Bristol-Myers Squibb); TIPRANAVIR™ (PNU-140690, a non-peptic dihydropyrrone; Pharmacia & Upjohn); PD-178390 (a nonpeptidic dihydropyrrone; Parke-Davis); BMS 232632 (an azapeptide; Bristol-Myers Squibb); L-756,423 (an indinavir analog; Merck); DMP-450 (a cyclic urea compound; Avid & DuPont); AG-1776 (a peptidomimetic with *in vitro* activity against protease inhibitor-resistant viruses; Agouron); VX-175/GW-433908 (phosphate prodrug of amprenavir; Vertex & Glaxo Wellcome); CGP61755 (Ciba); and AGENERASE™ (amprenavir; Glaxo Wellcome Inc.).

[0970] Additional antiretroviral agents include fusion inhibitors/gp41 binders. Fusion inhibitors/gp41 binders include T-20 (a peptide from residues 643-678 of the HIV gp41 transmembrane protein ectodomain which binds to gp41 in its resting state and prevents transformation to the fusogenic state; Trimeris) and T-1249 (a second-generation fusion inhibitor; Trimeris).

[0971] Additional antiretroviral agents include fusion inhibitors/chemokine receptor antagonists. Fusion inhibitors/chemokine receptor antagonists include CXCR4 antagonists such as AMD 3100 (a bicyclam), SDF-1 and its analogs, and ALX40-4C (a cationic peptide), T22 (an 18 amino acid peptide; Trimeris) and the T22 analogs T134 and

T140; CCR5 antagonists such as RANTES (9-68), AOP-RANTES, NNY-RANTES, and TAK-779; and CCR5/CXCR4 antagonists such as NSC 651016 (a distamycin analog). Also included are CCR2B, CCR3, and CCR6 antagonists. Chemokine receptor agonists such as RANTES, SDF-1, MIP-1 $\alpha$ , MIP-1 $\beta$ , etc., may also inhibit fusion.

[0972] Additional antiretroviral agents include integrase inhibitors. Integrase inhibitors include dicaffeoylquinic (DFQA) acids; L-chicoric acid (a dicaffeoyltartaric (DCTA) acid); quinalizarin (QLC) and related anthraquinones; ZINTEVIR™ (AR 177, an oligonucleotide that probably acts at cell surface rather than being a true integrase inhibitor; Arondex); and naphthols such as those disclosed in WO 98/50347.

[0973] Additional antiretroviral agents include hydroxyurea-like compounds such as BCX-34 (a purine nucleoside phosphorylase inhibitor; Biocryst); ribonucleotide reductase inhibitors such as DIDOX™ (Molecules for Health); inosine monophosphate dehydrogenase (IMPDH) inhibitors such as VX-497 (Vertex); and mycophenolic acids such as CellCept (mycophenolate mofetil; Roche).

[0974] Additional antiretroviral agents include inhibitors of viral integrase, inhibitors of viral genome nuclear translocation such as arylene bis(methylketone) compounds; inhibitors of HIV entry such as AOP-RANTES, NNY-RANTES, RANTES-IgG fusion protein, soluble complexes of RANTES and glycosaminoglycans (GAG), and AMD-3100; nucleocapsid zinc finger inhibitors such as dithiane compounds; targets of HIV Tat and Rev; and pharmacoenhancers such as ABT-378.

[0975] Other antiretroviral therapies and adjunct therapies include cytokines and lymphokines such as MIP-1 $\alpha$ , MIP-1 $\beta$ , SDF-1 $\alpha$ , IL-2, PROLEUKIN™ (aldesleukin/L2-7001; Chiron), IL-4, IL-10, IL-12, and IL-13; interferons such as IFN- $\alpha$ 2a; antagonists of TNFs, NF $\kappa$ B, GM-CSF, M-CSF, and IL-10; agents that modulate immune activation such as cyclosporin and prednisone; vaccines such as Remune™ (HIV Immunogen), APL 400-003 (Apollon), recombinant gp120 and fragments, bivalent (B/E) recombinant envelope glycoprotein, rgp120CM235, MN rgp120, SF-2 rgp120, gp120/soluble CD4 complex, Delta JR-FL protein, branched synthetic peptide derived from discontinuous gp120 C3/C4 domain, fusion-competent immunogens, and Gag, Pol, Nef, and Tat vaccines; gene-based therapies such as genetic suppressor elements (GSEs; WO 98/54366), and intrakines (genetically modified CC chemokines targeted to the ER to block surface expression of newly synthesized CCR5 (Yang *et al.*, *PNAS* 94:11567-72 (1997); Chen *et al.*, *Nat. Med.*

3:1110-16 (1997)); antibodies such as the anti-CXCR4 antibody 12G5, the anti-CCR5 antibodies 2D7, 5C7, PA8, PA9, PA10, PA11, PA12, and PA14, the anti-CD4 antibodies Q4120 and RPA-T4, the anti-CCR3 antibody 7B11, the anti-gp120 antibodies 17b, 48d, 447-52D, 257-D, 268-D and 50.1, anti-Tat antibodies, anti-TNF- $\alpha$  antibodies, and monoclonal antibody 33A; aryl hydrocarbon (AH) receptor agonists and antagonists such as TCDD, 3,3',4,4',5-pentachlorobiphenyl, 3,3',4,4'-tetrachlorobiphenyl, and  $\alpha$ -naphthoflavone (WO 98/30213); and antioxidants such as  $\gamma$ -L-glutamyl-L-cysteine ethyl ester ( $\gamma$ -GCE; WO 99/56764).

[0976] In other preferred embodiments, Therapeutics of the invention may be administered in combination with anti-opportunistic infection agents. Anti-opportunistic agents that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, TRIMETHOPRIM-SULFAMETHOXAZOLE™, DAPSONE™, PENTAMIDINE™, ATOVAQUONE™, ISONIAZID™, RIFAMPIN™, PYRAZINAMIDE™, ETHAMBUTOL™, RIFABUTIN™, CLARITHROMYCIN™, AZITHROMYCIN™, GANCICLOVIR™, FOSCARNET™, CIDOFOVIR™, FLUCONAZOLE™, ITRACONAZOLE™, KETOCONAZOLE™, ACYCLOVIR™, FAMCICOLVIR™, PYRIMETHAMINE™, LEUCOVORIN™, NEUPOGEN™ (filgrastim/G-CSF), and LEUKINE™ (sargramostim/GM-CSF). In a specific embodiment, Therapeutics of the invention are used in any combination with TRIMETHOPRIM-SULFAMETHOXAZOLE™, DAPSONE™, PENTAMIDINE™, and/or ATOVAQUONE™ to prophylactically treat or prevent an opportunistic *Pneumocystis carinii* pneumonia infection. In another specific embodiment, Therapeutics of the invention are used in any combination with ISONIAZID™, RIFAMPIN™, PYRAZINAMIDE™, and/or ETHAMBUTOL™ to prophylactically treat or prevent an opportunistic *Mycobacterium avium* complex infection. In another specific embodiment, Therapeutics of the invention are used in any combination with RIFABUTIN™, CLARITHROMYCIN™, and/or AZITHROMYCIN™ to prophylactically treat or prevent an opportunistic *Mycobacterium tuberculosis* infection. In another specific embodiment, Therapeutics of the invention are used in any combination with GANCICLOVIR™, FOSCARNET™, and/or CIDOFOVIR™ to prophylactically treat or prevent an opportunistic cytomegalovirus infection. In another specific embodiment, Therapeutics of

the invention are used in any combination with FLUCONAZOLE™, ITRACONAZOLE™, and/or KETOCONAZOLE™ to prophylactically treat or prevent an opportunistic fungal infection. In another specific embodiment, Therapeutics of the invention are used in any combination with ACYCLOVIR™ and/or FAMCICOLVIR™ to prophylactically treat or prevent an opportunistic herpes simplex virus type I and/or type II infection. In another specific embodiment, Therapeutics of the invention are used in any combination with PYRIMETHAMINE™ and/or LEUCOVORIN™ to prophylactically treat or prevent an opportunistic *Toxoplasma gondii* infection. In another specific embodiment, Therapeutics of the invention are used in any combination with LEUCOVORIN™ and/or NEUPOGEN™ to prophylactically treat or prevent an opportunistic bacterial infection.

[0977] In a further embodiment, the Therapeutics of the invention are administered in combination with an antiviral agent. Antiviral agents that may be administered with the Therapeutics of the invention include, but are not limited to, acyclovir, ribavirin, amantadine, and remantidine.

[0978] In a further preferred embodiment, the Therapeutics of the invention are administered in combination with an antibiotic agent. Antibiotic agents that may be administered with the Therapeutics of the invention include, but are not limited to, amoxicillin, beta-lactamases, aminoglycosides, beta-lactam (glycopeptide), beta-lactamases, Clindamycin, chloramphenicol, cephalosporins, ciprofloxacin, ciprofloxacin, erythromycin, fluoroquinolones, macrolides, metronidazole, penicillins, quinolones, rapamycin, rifampin, streptomycin, sulfonamide, tetracyclines, trimethoprim, trimethoprim-sulfamethoxazole, and vancomycin.

[0979] In another embodiment, the Therapeutics of the invention are administered in combination with an anticoagulant. Anticoagulants that may be administered with the compositions of the invention include, but are not limited to, heparin, low molecular weight heparin, warfarin sodium (e.g., COUMADIN®), dicumarol, 4-hydroxycoumarin, anisindione (e.g., MIRADON™), acenocoumarol (e.g., nicoumalone, SINTHROME™), indan-1,3-dione, phenprocoumon (e.g., MARCUMAR™), ethyl biscoumacetate (e.g., TROMEXAN™), and aspirin. In a specific embodiment, compositions of the invention are administered in combination with heparin and/or warfarin. In another specific embodiment, compositions of the invention are administered in combination with



warfarin. In another specific embodiment, compositions of the invention are administered in combination with warfarin and aspirin. In another specific embodiment, compositions of the invention are administered in combination with heparin. In another specific embodiment, compositions of the invention are administered in combination with heparin and aspirin.

[0980] In another embodiment, the Therapeutics of the invention are administered in combination with thrombolytic drugs. Thrombolytic drugs that may be administered with the compositions of the invention include, but are not limited to, plasminogen, lys-plasminogen, alpha2-antiplasmin, streptokinase (e.g., KABIKINASE™), antiplasmin (e.g., EMINASE™), tissue plasminogen activator (t-PA, altevase, ACTIVASE™), urokinase (e.g., ABBOKINASE™), sauruplase, (Prourokinase, single chain urokinase), and aminocaproic acid (e.g., AMICAR™). In a specific embodiment, compositions of the invention are administered in combination with tissue plasminogen activator and aspirin.

[0981] In another embodiment, the Therapeutics of the invention are administered in combination with antiplatelet drugs. Antiplatelet drugs that may be administered with the compositions of the invention include, but are not limited to, aspirin, dipyridamole (e.g., PERSANTINE™), and ticlopidine (e.g., TICLID™).

[0982] In specific embodiments, the use of anti-coagulants, thrombolytic and/or antiplatelet drugs in combination with Therapeutics of the invention is contemplated for the prevention, diagnosis, and/or treatment of thrombosis, arterial thrombosis, venous thrombosis, thromboembolism, pulmonary embolism, atherosclerosis, myocardial infarction, transient ischemic attack, unstable angina. In specific embodiments, the use of anticoagulants, thrombolytic drugs and/or antiplatelet drugs in combination with Therapeutics of the invention is contemplated for the prevention of occlusion of saphenous grafts, for reducing the risk of periprocedural thrombosis as might accompany angioplasty procedures, for reducing the risk of stroke in patients with atrial fibrillation including nonrheumatic atrial fibrillation, for reducing the risk of embolism associated with mechanical heart valves and or mitral valves disease. Other uses for the therapeutics of the invention, alone or in combination with antiplatelet, anticoagulant, and/or thrombolytic drugs, include, but are not limited to, the prevention of occlusions in extracorporeal devices (e.g., intravascular canulas, vascular access shunts in hemodialysis patients, hemodialysis machines, and cardiopulmonary bypass machines).

[0983] In an additional embodiment, the Therapeutics of the invention are administered in combination with drugs effective in treating iron deficiency and hypochromic anemias, including but not limited to, ferrous sulfate (iron sulfate, FEOSOL™), ferrous fumarate (e.g., FEOSTAT™), ferrous gluconate (e.g., FERGON™), polysaccharide-iron complex (e.g., NIFEREX™), iron dextran injection (e.g., INFED™), cupric sulfate, pyridoxine, riboflavin, Vitamin B<sub>12</sub>, cyanocobalamin injection (e.g., REDISOL™, RUBRAMIN PC™), hydroxocobalamin, folic acid (e.g., FOLVITE™), leucovorin (folinic acid, 5-CHOH4PteGlu, citrovorum factor) or WELLCOVORIN (Calcium salt of leucovorin), transferrin or ferritin.

[0984] In an additional embodiment, the compositions of the invention are administered alone or in combination with an anti-angiogenic agent. Anti-angiogenic agents that may be administered with the compositions of the invention include, but are not limited to, Angiostatin (Entremed, Rockville, MD), Troponin-1 (Boston Life Sciences, Boston, MA), anti-Invasive Factor, retinoic acid and derivatives thereof, paclitaxel (Taxol), Suramin, Tissue Inhibitor of Metalloproteinase-1, Tissue Inhibitor of Metalloproteinase-2, VEGI, Plasminogen Activator Inhibitor-1, Plasminogen Activator Inhibitor-2, and various forms of the lighter "d group" transition metals.

[0985] Lighter "d group" transition metals include, for example, vanadium, molybdenum, tungsten, titanium, niobium, and tantalum species. Such transition metal species may form transition metal complexes. Suitable complexes of the above-mentioned transition metal species include oxo transition metal complexes.

[0986] Representative examples of vanadium complexes include oxo vanadium complexes such as vanadate and vanadyl complexes. Suitable vanadate complexes include metavanadate and orthovanadate complexes such as, for example, ammonium metavanadate, sodium metavanadate, and sodium orthovanadate. Suitable vanadyl complexes include, for example, vanadyl acetylacetonate and vanadyl sulfate including vanadyl sulfate hydrates such as vanadyl sulfate mono- and trihydrates.

[0987] Representative examples of tungsten and molybdenum complexes also include oxo complexes. Suitable oxo tungsten complexes include tungstate and tungsten oxide complexes. Suitable tungstate complexes include ammonium tungstate, calcium tungstate, sodium tungstate dihydrate, and tungstic acid. Suitable tungsten oxides include tungsten (IV) oxide and tungsten (VI) oxide. Suitable oxo molybdenum complexes include

molybdate, molybdenum oxide, and molybdenyl complexes. Suitable molybdate complexes include ammonium molybdate and its hydrates, sodium molybdate and its hydrates, and potassium molybdate and its hydrates. Suitable molybdenum oxides include molybdenum (VI) oxide, molybdenum (VI) oxide, and molybdic acid. Suitable molybdenyl complexes include, for example, molybdenyl acetylacetonate. Other suitable tungsten and molybdenum complexes include hydroxo derivatives derived from, for example, glycerol, tartaric acid, and sugars.

[0988] A wide variety of other anti-angiogenic factors may also be utilized within the context of the present invention. Representative examples include, but are not limited to, platelet factor 4; protamine sulphate; sulphated chitin derivatives (prepared from queen crab shells), (Murata et al., *Cancer Res.* 51:22-26, (1991)); Sulphated Polysaccharide Peptidoglycan Complex (SP-PG) (the function of this compound may be enhanced by the presence of steroids such as estrogen, and tamoxifen citrate); Staurosporine; modulators of matrix metabolism, including for example, proline analogs, cishydroxyproline, d,L-3,4-dehydropoline, Thiaproline, alpha,alpha-dipyridyl, aminopropionitrile fumarate; 4-propyl-5-(4-pyridinyl)-2(3H)-oxazolone; Methotrexate; Mitoxantrone; Heparin; Interferons; 2 Macroglobulin-serum; ChIMP-3 (Pavloff et al., *J. Bio. Chem.* 267:17321-17326, (1992)); Chymostatin (Tomkinson et al., *Biochem J.* 286:475-480, (1992)); Cyclodextrin Tetradecasulfate; Eponemycin; Camptothecin; Fumagillin (Ingber et al., *Nature* 348:555-557, (1990)); Gold Sodium Thiomalate ("GST"; Matsubara and Ziff, *J. Clin. Invest.* 79:1440-1446, (1987)); anticollagenase-serum; alpha2-antiplasmin (Holmes et al., *J. Biol. Chem.* 262(4):1659-1664, (1987)); Bisantrene (National Cancer Institute); Lobenzarit disodium (N-(2)-carboxyphenyl-4- chloroanthronilic acid disodium or "CCA"; (Takeuchi et al., *Agents Actions* 36:312-316, (1992)); and metalloproteinase inhibitors such as BB94.

[0989] Additional anti-angiogenic factors that may also be utilized within the context of the present invention include Thalidomide, (Celgene, Warren, NJ); Angiostatic steroid; AGM-1470 (H. Brem and J. Folkman *J. Pediatr. Surg.* 28:445-51 (1993)); an integrin alpha v beta 3 antagonist (C. Storgard et al., *J. Clin. Invest.* 103:47-54 (1999)); carboxynaminolmidazole; Carboxyamidotriazole (CAI) (National Cancer Institute, Bethesda, MD); Conbretastatin A-4 (CA4P) (OXiGENE, Boston, MA); Squalamine (Magainin Pharmaceuticals, Plymouth Meeting, PA); TNP-470, (Tap Pharmaceuticals,

Deerfield, IL); ZD-0101 AstraZeneca (London, UK); APRA (CT2584); Benefin, Byrostatin-1 (SC339555); CGP-41251 (PKC 412); CM101; Dextrazoxane (ICRF187); DMXAA; Endostatin; Flavopridiol; Genestein; GTE; ImmTher; Iressa (ZD1839); Octreotide (Somatostatin); Panretin; Penacillamine; Photopoint; PI-88; Prinomastat (AG-3340) Purlitin; Suradista (FCE26644); Tamoxifen (Nolvadex); Tazarotene; Tetrathiomolybdate; Xeloda (Capecitabine); and 5-Fluorouracil.

[0990] Anti-angiogenic agents that may be administered in combination with the compounds of the invention may work through a variety of mechanisms including, but not limited to, inhibiting proteolysis of the extracellular matrix, blocking the function of endothelial cell-extracellular matrix adhesion molecules, by antagonizing the function of angiogenesis inducers such as growth factors, and inhibiting integrin receptors expressed on proliferating endothelial cells. Examples of anti-angiogenic inhibitors that interfere with extracellular matrix proteolysis and which may be administered in combination with the compositions of the invention include, but are not limited to, AG-3340 (Agouron, La Jolla, CA), BAY-12-9566 (Bayer, West Haven, CT), BMS-275291 (Bristol Myers Squibb, Princeton, NJ), CGS-27032A (Novartis, East Hanover, NJ), Marimastat (British Biotech, Oxford, UK), and Metastat (Aeterna, St-Foy, Quebec). Examples of anti-angiogenic inhibitors that act by blocking the function of endothelial cell-extracellular matrix adhesion molecules and which may be administered in combination with the compositions of the invention include, but are not limited to, EMD-121974 (Merck KGaA Darmstadt, Germany) and Vitaxin (Ixsys, La Jolla, CA/Medimmune, Gaithersburg, MD). Examples of anti-angiogenic agents that act by directly antagonizing or inhibiting angiogenesis inducers and which may be administered in combination with the compositions of the invention include, but are not limited to, Angiozyme (Ribozyme, Boulder, CO), Anti-VEGF antibody (Genentech, S. San Francisco, CA), PTK-787/ZK-225846 (Novartis, Basel, Switzerland), SU-101 (Sugen, S. San Francisco, CA), SU-5416 (Sugen/ Pharmacia Upjohn, Bridgewater, NJ), and SU-6668 (Sugen). Other anti-angiogenic agents act to indirectly inhibit angiogenesis. Examples of indirect inhibitors of angiogenesis which may be administered in combination with the compositions of the invention include, but are not limited to, IM-862 (Cytran, Kirkland, WA), Interferon-alpha, IL-12 (Roche, Nutley, NJ), and Pentosan polysulfate (Georgetown University, Washington, DC).

[0991] In particular embodiments, the use of compositions of the invention in combination with anti-angiogenic agents is contemplated for the treatment, prevention, and/or amelioration of an autoimmune disease, such as for example, an autoimmune disease described herein.

[0992] In a particular embodiment, the use of compositions of the invention in combination with anti-angiogenic agents is contemplated for the treatment, prevention, and/or amelioration of arthritis. In a more particular embodiment, the use of compositions of the invention in combination with anti-angiogenic agents is contemplated for the treatment, prevention, and/or amelioration of rheumatoid arthritis.

[0993] In another embodiment, the polynucleotides encoding a polypeptide of the present invention are administered in combination with an angiogenic protein, or polynucleotides encoding an angiogenic protein. Examples of angiogenic proteins that may be administered with the compositions of the invention include, but are not limited to, acidic and basic fibroblast growth factors, VEGF-1, VEGF-2, VEGF-3, epidermal growth factor alpha and beta, platelet-derived endothelial cell growth factor, platelet-derived growth factor, tumor necrosis factor alpha, hepatocyte growth factor, insulin-like growth factor, colony stimulating factor, macrophage colony stimulating factor, granulocyte/macrophage colony stimulating factor, and nitric oxide synthase.

[0994] In another embodiment, compositions of the invention are administered in combination with a chemotherapeutic agent. Chemotherapeutic agents that may be administered with the Therapeutics of the invention include, but are not limited to, antibiotic derivatives (e.g., doxorubicin, bleomycin, daunorubicin, and dactinomycin); antiestrogens (e.g., tamoxifen); antimetabolites (e.g., fluorouracil, 5-FU, methotrexate, floxuridine, interferon alpha-2b, glutamic acid, plicamycin, mercaptopurine, and 6-thioguanine); cytotoxic agents (e.g., carmustine, BCNU, lomustine, CCNU, cytosine arabinoside, cyclophosphamide, estramustine, hydroxyurea, procarbazine, mitomycin, busulfan, cis-platin, and vincristine sulfate); hormones (e.g., medroxyprogesterone, estramustine phosphate sodium, ethinyl estradiol, estradiol, megestrol acetate, methyltestosterone, diethylstilbestrol diphosphate, chlorotrianisene, and testolactone); nitrogen mustard derivatives (e.g., mephalen, chorambucil, mechlorethamine (nitrogen mustard) and thiotepa); steroids and combinations (e.g., bethamethasone sodium

phosphate); and others (e.g., dicarbazine, asparaginase, mitotane, vincristine sulfate, vinblastine sulfate, and etoposide).

[0995] In one embodiment, the compositions of the invention are administered in combination with one or more of the following drugs: infliximab (also known as Remicade™ Centocor, Inc.), Trocade (Roche, RO-32-3555), Leflunomide (also known as Arava™ from Hoechst Marion Roussel), Kineret™ (an IL-1 Receptor antagonist also known as Anakinra from Amgen, Inc.)

[0996] In a specific embodiment, compositions of the invention are administered in combination with CHOP (cyclophosphamide, doxorubicin, vincristine, and prednisone) or combination of one or more of the components of CHOP. In one embodiment, the compositions of the invention are administered in combination with anti-CD20 antibodies, human monoclonal anti-CD20 antibodies. In another embodiment, the compositions of the invention are administered in combination with anti-CD20 antibodies and CHOP, or anti-CD20 antibodies and any combination of one or more of the components of CHOP, particularly cyclophosphamide and/or prednisone. In a specific embodiment, compositions of the invention are administered in combination with Rituximab. In a further embodiment, compositions of the invention are administered with Rituximab and CHOP, or Rituximab and any combination of one or more of the components of CHOP, particularly cyclophosphamide and/or prednisone. In a specific embodiment, compositions of the invention are administered in combination with tositumomab. In a further embodiment, compositions of the invention are administered with tositumomab and CHOP, or tositumomab and any combination of one or more of the components of CHOP, particularly cyclophosphamide and/or prednisone. The anti-CD20 antibodies may optionally be associated with radioisotopes, toxins or cytotoxic prodrugs.

[0997] In another specific embodiment, the compositions of the invention are administered in combination Zevalin™. In a further embodiment, compositions of the invention are administered with Zevalin™ and CHOP, or Zevalin™ and any combination of one or more of the components of CHOP, particularly cyclophosphamide and/or prednisone. Zevalin™ may be associated with one or more radisotopes. Particularly preferred isotopes are <sup>90</sup>Y and <sup>111</sup>In.

[0998] In an additional embodiment, the Therapeutics of the invention are administered in combination with cytokines. Cytokines that may be administered with the

Therapeutics of the invention include, but are not limited to, IL2, IL3, IL4, IL5, IL6, IL7, IL10, IL12, IL13, IL15, anti-CD40, CD40L, IFN-gamma and TNF-alpha. In another embodiment, Therapeutics of the invention may be administered with any interleukin, including, but not limited to, IL-1alpha, IL-1beta, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18, IL-19, IL-20, and IL-21.

[0999] In an additional embodiment, the Therapeutics of the invention are administered in combination with angiogenic proteins. Angiogenic proteins that may be administered with the Therapeutics of the invention include, but are not limited to, Glioma Derived Growth Factor (GDGF), as disclosed in European Patent Number EP-399816; Platelet Derived Growth Factor-A (PDGF-A), as disclosed in European Patent Number EP-682110; Platelet Derived Growth Factor-B (PDGF-B), as disclosed in European Patent Number EP-282317; Placental Growth Factor (PGF), as disclosed in International Publication Number WO 92/06194; Placental Growth Factor-2 (PGF-2), as disclosed in Hauser et al., *Growth Factors*, 4:259-268 (1993); Vascular Endothelial Growth Factor (VEGF), as disclosed in International Publication Number WO 90/13649; Vascular Endothelial Growth Factor-A (VEGF-A), as disclosed in European Patent Number EP-506477; Vascular Endothelial Growth Factor-2 (VEGF-2), as disclosed in International Publication Number WO 96/39515; Vascular Endothelial Growth Factor B (VEGF-3); Vascular Endothelial Growth Factor B-186 (VEGF-B186), as disclosed in International Publication Number WO 96/26736; Vascular Endothelial Growth Factor-D (VEGF-D), as disclosed in International Publication Number WO 98/02543; Vascular Endothelial Growth Factor-D (VEGF-D), as disclosed in International Publication Number WO 98/07832; and Vascular Endothelial Growth Factor-E (VEGF-E), as disclosed in German Patent Number DE19639601. The above mentioned references are herein incorporated by reference in their entireties.

[01000] In an additional embodiment, the Therapeutics of the invention are administered in combination with Fibroblast Growth Factors. Fibroblast Growth Factors that may be administered with the Therapeutics of the invention include, but are not limited to, FGF-1, FGF-2, FGF-3, FGF-4, FGF-5, FGF-6, FGF-7, FGF-8, FGF-9, FGF-10, FGF-11, FGF-12, FGF-13, FGF-14, and FGF-15.

[01001] In additional embodiments, the Therapeutics of the invention are administered in combination with other therapeutic or prophylactic regimens, such as, for example, radiation therapy.

[01002] In one embodiment, the Therapeutics of the invention are administered in combination with treatments for gastrointestinal disorders. Treatments for gastrointestinal disorders include, but are not limited to, H<sub>2</sub> histamine receptor antagonists such as TAGAMET<sup>TM</sup> (cimetidine), ZANTAC<sup>TM</sup> (ranitidine), PEPCID<sup>TM</sup> (famotidine), and AXID<sup>TM</sup> (nizatidine); inhibitors of H<sup>+</sup>, K<sup>+</sup> ATPase such as PREVACID<sup>TM</sup> (lansoprazole) and PRILOSEC<sup>TM</sup> (omeprazole); Bismuth compounds such as PEPTO-BISMOL<sup>TM</sup> (bismuth subsalicylate) and DE-NOL<sup>TM</sup> (bismuth subcitrate); Various antacids; Sucralfate; Prostaglandin Analogs such as CYTOTEC<sup>TM</sup> (misoprostol); Muscarinic cholinergic antagonists; Laxatives (Surfactant laxatives, Stimulant laxatives, Saline and Osmotic laxatives); AntiDiarrheal agents such as LOMOTIL<sup>TM</sup> (diphenoxylate), MOTOFEN<sup>TM</sup> (diphenoxin), IMODIUM<sup>TM</sup> (loperamide hydrochloride), synthetic analogs of somatostatin such as SANDOSTATIN<sup>TM</sup> (octreotide), antiemetic agents such as ZOFRAN<sup>TM</sup> (ondansetron), KYTRIL<sup>TM</sup> (granisetron hydrochloride), tropisetron, dolasetron, metoclopramide, chlorpromazine, perphenazine, prochlorperazine, promethazine, thiethylperazine, trifluorpromazine, domperidone, haloperidol, droperidol, trimethobenzamide, dexamethasone, methylprednisolone, dronabinol, nabilone; D2 antagonists such as metoclopramide, trimethobenzamide and chlorpromazine; bile salts; chenodeoxycholic acid; ursodeoxycholic acid; and pancreatic enzyme preparations such as pancreatin and pancrelipase.

#### *Example 14: Method of Treating Decreased Levels of the Polypeptide*

[01003] The present invention relates to a method for treating an individual in need of an increased level of a polypeptide of the invention in the body comprising administering to such an individual a composition comprising a therapeutically effective amount of an agonist of the invention (including polypeptides of the invention). Moreover, it will be appreciated that conditions caused by a decrease in the standard or normal expression level of a polypeptide of the present invention in an individual can be treated by administering the agonist or antagonist of the present invention. Thus, the invention also



provides a method of treatment of an individual in need of an increased level of the polypeptide comprising administering to such an individual a Therapeutic comprising an amount of the agonist or antagonist to increase the activity level of the polypeptide in such an individual.

[01004] For example, a patient with decreased levels of a polypeptide receives a daily dose 0.1-100 ug/kg of the agonist or antagonist for six consecutive days. The exact details of the dosing scheme, based on administration and formulation, are provided in Example 13.

***Example 15: Method of Treating Increased Levels of the Polypeptide***

[01005] The present invention also relates to a method of treating an individual in need of a decreased level of a polypeptide of the invention in the body comprising administering to such an individual a composition comprising a therapeutically effective amount of an antagonist of the invention (including polypeptides and antibodies of the invention).

[01006] In one example, antisense technology is used to inhibit production of a polypeptide of the present invention. This technology is one example of a method of decreasing levels of a polypeptide, due to a variety of etiologies, such as cancer.

[01007] For example, a patient diagnosed with abnormally increased levels of a polypeptide is administered intravenously antisense polynucleotides at 0.5, 1.0, 1.5, 2.0 and 3.0 mg/kg day for 21 days. This treatment is repeated after a 7-day rest period if the treatment was well tolerated. The formulation of the antisense polynucleotide is provided in Example 13.

***Example 16: Method of Treatment Using Gene Therapy-Ex Vivo***

[01008] One method of gene therapy transplants fibroblasts, which are capable of expressing a polypeptide, onto a patient. Generally, fibroblasts are obtained from a subject by skin biopsy. The resulting tissue is placed in tissue-culture medium and separated into small pieces. Small chunks of the tissue are placed on a wet surface of a

tissue culture flask, approximately ten pieces are placed in each flask. The flask is turned upside down, closed tight and left at room temperature over night. After 24 hours at room temperature, the flask is inverted and the chunks of tissue remain fixed to the bottom of the flask and fresh media (e.g., Ham's F12 media, with 10% FBS, penicillin and streptomycin) is added. The flasks are then incubated at 37 degree C for approximately one week.

[01009] At this time, fresh media is added and subsequently changed every several days. After an additional two weeks in culture, a monolayer of fibroblasts emerge. The monolayer is trypsinized and scaled into larger flasks.

[01010] pMV-7 (Kirschmeier, P.T. et al., DNA, 7:219-25 (1988)), flanked by the long terminal repeats of the Moloney murine sarcoma virus, is digested with EcoRI and HindIII and subsequently treated with calf intestinal phosphatase. The linear vector is fractionated on agarose gel and purified, using glass beads.

[01011] The cDNA encoding a polypeptide of the present invention can be amplified using PCR primers which correspond to the 5' and 3' end sequences respectively as set forth in Example 1 using primers and having appropriate restriction sites and initiation/stop codons, if necessary. Preferably, the 5' primer contains an EcoRI site and the 3' primer includes a HindIII site. Equal quantities of the Moloney murine sarcoma virus linear backbone and the amplified EcoRI and HindIII fragment are added together, in the presence of T4 DNA ligase. The resulting mixture is maintained under conditions appropriate for ligation of the two fragments. The ligation mixture is then used to transform bacteria HB101, which are then plated onto agar containing kanamycin for the purpose of confirming that the vector has the gene of interest properly inserted.

[01012] The amphotropic pA317 or GP+am12 packaging cells are grown in tissue culture to confluent density in Dulbecco's Modified Eagles Medium (DMEM) with 10% calf serum (CS), penicillin and streptomycin. The MSV vector containing the gene is then added to the media and the packaging cells transduced with the vector. The packaging cells now produce infectious viral particles containing the gene (the packaging cells are now referred to as producer cells).

[01013] Fresh media is added to the transduced producer cells, and subsequently, the media is harvested from a 10 cm plate of confluent producer cells. The spent media, containing the infectious viral particles, is filtered through a millipore filter to remove

detached producer cells and this media is then used to infect fibroblast cells. Media is removed from a sub-confluent plate of fibroblasts and quickly replaced with the media from the producer cells. This media is removed and replaced with fresh media. If the titer of virus is high, then virtually all fibroblasts will be infected and no selection is required. If the titer is very low, then it is necessary to use a retroviral vector that has a selectable marker, such as neo or his. Once the fibroblasts have been efficiently infected, the fibroblasts are analyzed to determine whether protein is produced.

[01014] The engineered fibroblasts are then transplanted onto the host, either alone or after having been grown to confluence on cytodex 3 microcarrier beads.

***Example 17: Gene Therapy Using Endogenous Genes Corresponding To Polynucleotides of the Invention***

[01015] Another method of gene therapy according to the present invention involves operably associating the endogenous polynucleotide sequence of the invention with a promoter via homologous recombination as described, for example, in U.S. Patent NO: 5,641,670, issued June 24, 1997; International Publication NO: WO 96/29411, published September 26, 1996; International Publication NO: WO 94/12650, published August 4, 1994; Koller et al., Proc. Natl. Acad. Sci. USA, 86:8932-8935 (1989); and Zijlstra et al., Nature, 342:435-438 (1989). This method involves the activation of a gene which is present in the target cells, but which is not expressed in the cells, or is expressed at a lower level than desired.

[01016] Polynucleotide constructs are made which contain a promoter and targeting sequences, which are homologous to the 5' non-coding sequence of endogenous polynucleotide sequence, flanking the promoter. The targeting sequence will be sufficiently near the 5' end of the polynucleotide sequence so the promoter will be operably linked to the endogenous sequence upon homologous recombination. The promoter and the targeting sequences can be amplified using PCR. Preferably, the amplified promoter contains distinct restriction enzyme sites on the 5' and 3' ends. Preferably, the 3' end of the first targeting sequence contains the same restriction enzyme

site as the 5' end of the amplified promoter and the 5' end of the second targeting sequence contains the same restriction site as the 3' end of the amplified promoter.

[01017] The amplified promoter and the amplified targeting sequences are digested with the appropriate restriction enzymes and subsequently treated with calf intestinal phosphatase. The digested promoter and digested targeting sequences are added together in the presence of T4 DNA ligase. The resulting mixture is maintained under conditions appropriate for ligation of the two fragments. The construct is size fractionated on an agarose gel, then purified by phenol extraction and ethanol precipitation.

[01018] In this Example, the polynucleotide constructs are administered as naked polynucleotides via electroporation. However, the polynucleotide constructs may also be administered with transfection-facilitating agents, such as liposomes, viral sequences, viral particles, precipitating agents, etc. Such methods of delivery are known in the art.

[01019] Once the cells are transfected, homologous recombination will take place which results in the promoter being operably linked to the endogenous polynucleotide sequence. This results in the expression of polynucleotide corresponding to the polynucleotide in the cell. Expression may be detected by immunological staining, or any other method known in the art.

[01020] Fibroblasts are obtained from a subject by skin biopsy. The resulting tissue is placed in DMEM + 10% fetal calf serum. Exponentially growing or early stationary phase fibroblasts are trypsinized and rinsed from the plastic surface with nutrient medium. An aliquot of the cell suspension is removed for counting, and the remaining cells are subjected to centrifugation. The supernatant is aspirated and the pellet is resuspended in 5 ml of electroporation buffer (20 mM HEPES pH 7.3, 137 mM NaCl, 5 mM KCl, 0.7 mM Na<sub>2</sub> HPO<sub>4</sub>, 6 mM dextrose). The cells are recentrifuged, the supernatant aspirated, and the cells resuspended in electroporation buffer containing 1 mg/ml acetylated bovine serum albumin. The final cell suspension contains approximately  $3 \times 10^6$  cells/ml. Electroporation should be performed immediately following resuspension.

[01021] Plasmid DNA is prepared according to standard techniques. For example, to construct a plasmid for targeting to the locus corresponding to the polynucleotide of the invention, plasmid pUC18 (MBI Fermentas, Amherst, NY) is digested with HindIII. The CMV promoter is amplified by PCR with an XbaI site on the 5' end and a BamHI site on the 3' end. Two non-coding sequences are amplified via PCR: one non-coding sequence

(fragment 1) is amplified with a HindIII site at the 5' end and an Xba site at the 3' end; the other non-coding sequence (fragment 2) is amplified with a BamHI site at the 5' end and a HindIII site at the 3' end. The CMV promoter and the fragments (1 and 2) are digested with the appropriate enzymes (CMV promoter - XbaI and BamHI; fragment 1 - XbaI; fragment 2 - BamHI) and ligated together. The resulting ligation product is digested with HindIII, and ligated with the HindIII-digested pUC18 plasmid.

[01022] Plasmid DNA is added to a sterile cuvette with a 0.4 cm electrode gap (Bio-Rad). The final DNA concentration is generally at least 120 µg/ml. 0.5 ml of the cell suspension (containing approximately  $1.5 \times 10^6$  cells) is then added to the cuvette, and the cell suspension and DNA solutions are gently mixed. Electroporation is performed with a Gene-Pulser apparatus (Bio-Rad). Capacitance and voltage are set at 960 µF and 250-300 V, respectively. As voltage increases, cell survival decreases, but the percentage of surviving cells that stably incorporate the introduced DNA into their genome increases dramatically. Given these parameters, a pulse time of approximately 14-20 mSec should be observed.

[01023] Electroporated cells are maintained at room temperature for approximately 5 min, and the contents of the cuvette are then gently removed with a sterile transfer pipette. The cells are added directly to 10 ml of prewarmed nutrient media (DMEM with 15% calf serum) in a 10 cm dish and incubated at 37 degree C. The following day, the media is aspirated and replaced with 10 ml of fresh media and incubated for a further 16-24 hours.

[01024] The engineered fibroblasts are then injected into the host, either alone or after having been grown to confluence on cytodex 3 microcarrier beads. The fibroblasts now produce the protein product. The fibroblasts can then be introduced into a patient as described above.

### ***Example 18: Method of Treatment Using Gene Therapy - In Vivo***

[01025] Another aspect of the present invention is using *in vivo* gene therapy methods to treat disorders, diseases and conditions. The gene therapy method relates to the introduction of naked nucleic acid (DNA, RNA, and antisense DNA or RNA) sequences into an animal to increase or decrease the expression of the polypeptide. The polynucleotide of the present invention may be operatively linked to (i.e., associated with)

a promoter or any other genetic elements necessary for the expression of the polypeptide by the target tissue. Such gene therapy and delivery techniques and methods are known in the art, see, for example, WO90/11092, WO98/11779; U.S. Patent NO. 5693622, 5705151, 5580859; Tabata et al., *Cardiovasc. Res.* 35(3):470-479 (1997); Chao et al., *Pharmacol. Res.* 35(6):517-522 (1997); Wolff, *Neuromuscul. Disord.* 7(5):314-318 (1997); Schwartz et al., *Gene Ther.* 3(5):405-411 (1996); Tsurumi et al., *Circulation* 94(12):3281-3290 (1996) (incorporated herein by reference).

[01026] The polynucleotide constructs may be delivered by any method that delivers injectable materials to the cells of an animal, such as, injection into the interstitial space of tissues (heart, muscle, skin, lung, liver, intestine and the like). The polynucleotide constructs can be delivered in a pharmaceutically acceptable liquid or aqueous carrier.

[01027] The term "naked" polynucleotide, DNA or RNA, refers to sequences that are free from any delivery vehicle that acts to assist, promote, or facilitate entry into the cell, including viral sequences, viral particles, liposome formulations, lipofectin or precipitating agents and the like. However, the polynucleotides of the present invention may also be delivered in liposome formulations (such as those taught in Felgner P.L. et al. (1995) *Ann. NY Acad. Sci.* 772:126-139 and Abdallah B. et al. (1995) *Biol. Cell* 85(1):1-7) which can be prepared by methods well known to those skilled in the art.

[01028] The polynucleotide vector constructs used in the gene therapy method are preferably constructs that will not integrate into the host genome nor will they contain sequences that allow for replication. Any strong promoter known to those skilled in the art can be used for driving the expression of DNA. Unlike other gene therapy techniques, one major advantage of introducing naked nucleic acid sequences into target cells is the transitory nature of the polynucleotide synthesis in the cells. Studies have shown that non-replicating DNA sequences can be introduced into cells to provide production of the desired polypeptide for periods of up to six months.

[01029] The polynucleotide construct can be delivered to the interstitial space of tissues within an animal, including muscle, skin, brain, lung, liver, spleen, bone marrow, thymus, heart, lymph, blood, bone, cartilage, pancreas, kidney, gall bladder, stomach, intestine, testis, ovary, uterus, rectum, nervous system, eye, gland, and connective tissue. Interstitial space of the tissues comprises the intercellular fluid, mucopolysaccharide matrix among the reticular fibers of organ tissues, elastic fibers in the walls of vessels or chambers,

collagen fibers of fibrous tissues, or that same matrix within connective tissue ensheathing muscle cells or in the lacunae of bone. It is similarly the space occupied by the plasma of the circulation and the lymph fluid of the lymphatic channels. Delivery to the interstitial space of muscle tissue is preferred for the reasons discussed below. They may be conveniently delivered by injection into the tissues comprising these cells. They are preferably delivered to and expressed in persistent, non-dividing cells which are differentiated, although delivery and expression may be achieved in non-differentiated or less completely differentiated cells, such as, for example, stem cells of blood or skin fibroblasts. *In vivo* muscle cells are particularly competent in their ability to take up and express polynucleotides.

[01030] For the naked polynucleotide injection, an effective dosage amount of DNA or RNA will be in the range of from about 0.05 g/kg body weight to about 50 mg/kg body weight. Preferably the dosage will be from about 0.005 mg/kg to about 20 mg/kg and more preferably from about 0.05 mg/kg to about 5 mg/kg. Of course, as the artisan of ordinary skill will appreciate, this dosage will vary according to the tissue site of injection. The appropriate and effective dosage of nucleic acid sequence can readily be determined by those of ordinary skill in the art and may depend on the condition being treated and the route of administration. The preferred route of administration is by the parenteral route of injection into the interstitial space of tissues. However, other parenteral routes may also be used, such as, inhalation of an aerosol formulation particularly for delivery to lungs or bronchial tissues, throat or mucous membranes of the nose. In addition, naked polynucleotide constructs can be delivered to arteries during angioplasty by the catheter used in the procedure.

[01031] The dose response effects of injected polynucleotide in muscle *in vivo* is determined as follows. Suitable template DNA for production of mRNA coding for polypeptide of the present invention is prepared in accordance with a standard recombinant DNA methodology. The template DNA, which may be either circular or linear, is either used as naked DNA or complexed with liposomes. The quadriceps muscles of mice are then injected with various amounts of the template DNA.

[01032] Five to six week old female and male Balb/C mice are anesthetized by intraperitoneal injection with 0.3 ml of 2.5% Avertin. A 1.5 cm incision is made on the anterior thigh, and the quadriceps muscle is directly visualized. The template DNA is

injected in 0.1 ml of carrier in a 1 cc syringe through a 27 gauge needle over one minute, approximately 0.5 cm from the distal insertion site of the muscle into the knee and about 0.2 cm deep. A suture is placed over the injection site for future localization, and the skin is closed with stainless steel clips.

- [01033] After an appropriate incubation time (e.g., 7 days) muscle extracts are prepared by excising the entire quadriceps. Every fifth 15  $\mu$ m cross-section of the individual quadriceps muscles is histochemically stained for protein expression. A time course for protein expression may be done in a similar fashion except that quadriceps from different mice are harvested at different times. Persistence of DNA in muscle following injection may be determined by Southern blot analysis after preparing total cellular DNA and HIRT supernatants from injected and control mice. The results of the above experimentation in mice can be used to extrapolate proper dosages and other treatment parameters in humans and other animals using naked DNA.

### *Example 19: Transgenic Animals*

- [01034] The polypeptides of the invention can also be expressed in transgenic animals. Animals of any species, including, but not limited to, mice, rats, rabbits, hamsters, guinea pigs, pigs, micro-pigs, goats, sheep, cows and non-human primates, e.g., baboons, monkeys, and chimpanzees may be used to generate transgenic animals. In a specific embodiment, techniques described herein or otherwise known in the art, are used to express polypeptides of the invention in humans, as part of a gene therapy protocol.
- [01035] Any technique known in the art may be used to introduce the transgene (i.e., polynucleotides of the invention) into animals to produce the founder lines of transgenic animals. Such techniques include, but are not limited to, pronuclear microinjection (Paterson et al., Appl. Microbiol. Biotechnol. 40:691-698 (1994); Carver et al., Biotechnology (NY) 11:1263-1270 (1993); Wright et al., Biotechnology (NY) 9:830-834 (1991); and Hoppe et al., U.S. Pat. No. 4,873,191 (1989)); retrovirus mediated gene transfer into germ lines (Van der Putten et al., Proc. Natl. Acad. Sci., USA 82:6148-6152 (1985)), blastocysts or embryos; gene targeting in embryonic stem cells (Thompson et al., Cell 56:313-321 (1989)); electroporation of cells or embryos (Lo, 1983, Mol Cell. Biol. 3:1803-1814 (1983)); introduction of the polynucleotides of the invention using a gene



gun (see, e.g., Ulmer et al., Science 259:1745 (1993); introducing nucleic acid constructs into embryonic pluripotent stem cells and transferring the stem cells back into the blastocyst; and sperm-mediated gene transfer (Lavitrano et al., Cell 57:717-723 (1989); etc. For a review of such techniques, see Gordon, "Transgenic Animals," Intl. Rev. Cytol. 115:171-229 (1989), which is incorporated by reference herein in its entirety.

[01036] Any technique known in the art may be used to produce transgenic clones containing polynucleotides of the invention, for example, nuclear transfer into enucleated oocytes of nuclei from cultured embryonic, fetal, or adult cells induced to quiescence (Campbell et al., Nature 380:64-66 (1996); Wilmut et al., Nature 385:810-813 (1997)).

[01037] The present invention provides for transgenic animals that carry the transgene in all their cells, as well as animals which carry the transgene in some, but not all their cells, *i.e.*, mosaic animals or chimeric. The transgene may be integrated as a single transgene or as multiple copies such as in concatamers, *e.g.*, head-to-head tandems or head-to-tail tandems. The transgene may also be selectively introduced into and activated in a particular cell type by following, for example, the teaching of Lasko et al. (Lasko et al., Proc. Natl. Acad. Sci. USA 89:6232-6236 (1992)). The regulatory sequences required for such a cell-type specific activation will depend upon the particular cell type of interest, and will be apparent to those of skill in the art. When it is desired that the polynucleotide transgene be integrated into the chromosomal site of the endogenous gene, gene targeting is preferred. Briefly, when such a technique is to be utilized, vectors containing some nucleotide sequences homologous to the endogenous gene are designed for the purpose of integrating, via homologous recombination with chromosomal sequences, into and disrupting the function of the nucleotide sequence of the endogenous gene. The transgene may also be selectively introduced into a particular cell type, thus inactivating the endogenous gene in only that cell type, by following, for example, the teaching of Gu et al. (Gu et al., Science 265:103-106 (1994)). The regulatory sequences required for such a cell-type specific inactivation will depend upon the particular cell type of interest, and will be apparent to those of skill in the art.

[01038] Once transgenic animals have been generated, the expression of the recombinant gene may be assayed utilizing standard techniques. Initial screening may be accomplished by Southern blot analysis or PCR techniques to analyze animal tissues to verify that integration of the transgene has taken place. The level of mRNA expression of

the transgene in the tissues of the transgenic animals may also be assessed using techniques which include, but are not limited to, Northern blot analysis of tissue samples obtained from the animal, *in situ* hybridization analysis, and reverse transcriptase-PCR (rt-PCR). Samples of transgenic gene-expressing tissue may also be evaluated immunocytochemically or immunohistochemically using antibodies specific for the transgene product.

[01039] Once the founder animals are produced, they may be bred, inbred, outbred, or crossbred to produce colonies of the particular animal. Examples of such breeding strategies include, but are not limited to: outbreeding of founder animals with more than one integration site in order to establish separate lines; inbreeding of separate lines in order to produce compound transgenics that express the transgene at higher levels because of the effects of additive expression of each transgene; crossing of heterozygous transgenic animals to produce animals homozygous for a given integration site in order to both augment expression and eliminate the need for screening of animals by DNA analysis; crossing of separate homozygous lines to produce compound heterozygous or homozygous lines; and breeding to place the transgene on a distinct background that is appropriate for an experimental model of interest.

[01040] Transgenic animals of the invention have uses which include, but are not limited to, animal model systems useful in elaborating the biological function of polypeptides of the present invention, studying conditions and/or disorders associated with aberrant expression, and in screening for compounds effective in ameliorating such conditions and/or disorders.

### ***Example 20: Knock-Out Animals***

[01041] Endogenous gene expression can also be reduced by inactivating or "knocking out" the gene and/or its promoter using targeted homologous recombination. (See e.g., Smithies et al., *Nature* 317:230-234 (1985); Thomas & Capecchi, *Cell* 51:503-512 (1987); Thompson et al., *Cell* 5:313-321 (1989); each of which is incorporated by reference herein in its entirety.) For example, a mutant, non-functional polynucleotide of the invention (or a completely unrelated DNA sequence) flanked by DNA homologous to the endogenous polynucleotide sequence (either the coding regions or regulatory regions

(See, for example, Anderson et al. U.S. Patent No. 5,399,349; and Mulligan & Wilson, U.S. Patent No. 5,460,959 each of which is incorporated by reference herein in its entirety).

[01044] When the cells to be administered are non-autologous or non-MHC compatible cells, they can be administered using well known techniques which prevent the development of a host immune response against the introduced cells. For example, the cells may be introduced in an encapsulated form which, while allowing for an exchange of components with the immediate extracellular environment, does not allow the introduced cells to be recognized by the host immune system.

[01045] Transgenic and "knock-out" animals of the invention have uses which include, but are not limited to, animal model systems useful in elaborating the biological function of polypeptides of the present invention, studying conditions and/or disorders associated with aberrant expression, and in screening for compounds effective in ameliorating such conditions and/or disorders.

### ***Example 21: Assays Detecting Stimulation or Inhibition of B cell Proliferation and Differentiation***

[01046] Generation of functional humoral immune responses requires both soluble and cognate signaling between B-lineage cells and their microenvironment. Signals may impart a positive stimulus that allows a B-lineage cell to continue its programmed development, or a negative stimulus that instructs the cell to arrest its current developmental pathway. To date, numerous stimulatory and inhibitory signals have been found to influence B cell responsiveness including IL-2, IL-4, IL-5, IL-6, IL-7, IL-10, IL-13, IL-14 and IL-15. Interestingly, these signals are by themselves weak effectors but can, in combination with various co-stimulatory proteins, induce activation, proliferation, differentiation, homing, tolerance and death among B cell populations.

[01047] One of the best studied classes of B-cell co-stimulatory proteins is the TNF-superfamily. Within this family CD40, CD27, and CD30 along with their respective ligands CD154, CD70, and CD153 have been found to regulate a variety of immune responses. Assays which allow for the detection and/or observation of the proliferation and differentiation of these B-cell populations and their precursors are valuable tools in

determining the effects various proteins may have on these B-cell populations in terms of proliferation and differentiation. Listed below are two assays designed to allow for the detection of the differentiation, proliferation, or inhibition of B-cell populations and their precursors.

**[01048]** *In vitro* Assay- Agonists or antagonists of the invention can be assessed for its ability to induce activation, proliferation, differentiation or inhibition and/or death in B-cell populations and their precursors. The activity of the agonists or antagonists of the invention on purified human tonsillar B cells, measured qualitatively over the dose range from 0.1 to 10,000 ng/mL, is assessed in a standard B-lymphocyte co-stimulation assay in which purified tonsillar B cells are cultured in the presence of either formalin-fixed *Staphylococcus aureus* Cowan I (SAC) or immobilized anti-human IgM antibody as the priming agent. Second signals such as IL-2 and IL-15 synergize with SAC and IgM crosslinking to elicit B cell proliferation as measured by tritiated-thymidine incorporation. Novel synergizing agents can be readily identified using this assay. The assay involves isolating human tonsillar B cells by magnetic bead (MACS) depletion of CD3-positive cells. The resulting cell population is greater than 95% B cells as assessed by expression of CD45R(B220).

**[01049]** Various dilutions of each sample are placed into individual wells of a 96-well plate to which are added  $10^5$  B-cells suspended in culture medium (RPMI 1640 containing 10% FBS,  $5 \times 10^{-5}$ M 2ME, 100U/ml penicillin, 10ug/ml streptomycin, and  $10^{-5}$  dilution of SAC) in a total volume of 150ul. Proliferation or inhibition is quantitated by a 20h pulse (1uCi/well) with 3H-thymidine (6.7 Ci/mM) beginning 72h post factor addition. The positive and negative controls are IL2 and medium respectively.

**[01050]** *In Vivo* Assay- BALB/c mice are injected (i.p.) twice per day with buffer only, or 2 mg/Kg of agonists or antagonists of the invention, or truncated forms thereof. Mice receive this treatment for 4 consecutive days, at which time they are sacrificed and various tissues and serum collected for analyses. Comparison of H&E sections from normal spleens and spleens treated with agonists or antagonists of the invention identify the results of the activity of the agonists or antagonists on spleen cells, such as the diffusion of peri-arterial lymphatic sheaths, and/or significant increases in the nucleated cellularity of the red pulp regions, which may indicate the activation of the differentiation and proliferation of B-cell populations. Immunohistochemical studies using a B cell marker,

anti-CD45R(B220), are used to determine whether any physiological changes to splenic cells, such as splenic disorganization, are due to increased B-cell representation within loosely defined B-cell zones that infiltrate established T-cell regions.

[01051] Flow cytometric analyses of the spleens from mice treated with agonist or antagonist is used to indicate whether the agonists or antagonists specifically increases the proportion of ThB+, CD45R(B220)dull B cells over that which is observed in control mice.

[01052] Likewise, a predicted consequence of increased mature B-cell representation *in vivo* is a relative increase in serum Ig titers. Accordingly, serum IgM and IgA levels are compared between buffer and agonists or antagonists-treated mice.

[01053] The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

### ***Example 22: T Cell Proliferation Assay***

[01054] A CD3-induced proliferation assay is performed on PBMCs and is measured by the uptake of  $^3\text{H}$ -thymidine. The assay is performed as follows. Ninety-six well plates are coated with 100  $\mu\text{l}$ /well of mAb to CD3 (HIT3a, Pharmingen) or isotype-matched control mAb (B33.1) overnight at 4 degrees C (1  $\mu\text{g}/\text{ml}$  in .05M bicarbonate buffer, pH 9.5), then washed three times with PBS. PBMC are isolated by F/H gradient centrifugation from human peripheral blood and added to quadruplicate wells (5 x  $10^4$ /well) of mAb coated plates in RPMI containing 10% FCS and P/S in the presence of varying concentrations of agonists or antagonists of the invention (total volume 200  $\mu\text{l}$ ). Relevant protein buffer and medium alone are controls. After 48 hr. culture at 37 degrees C, plates are spun for 2 min. at 1000 rpm and 100  $\mu\text{l}$  of supernatant is removed and stored -20 degrees C for measurement of IL-2 (or other cytokines) if effect on proliferation is observed. Wells are supplemented with 100  $\mu\text{l}$  of medium containing 0.5  $\mu\text{Ci}$  of  $^3\text{H}$ -thymidine and cultured at 37 degrees C for 18-24 hr. Wells are harvested and incorporation of  $^3\text{H}$ -thymidine used as a measure of proliferation. Anti-CD3 alone is the

positive control for proliferation. IL-2 (100 U/ml) is also used as a control which enhances proliferation. Control antibody which does not induce proliferation of T cells is used as the negative control for the effects of agonists or antagonists of the invention.

[01055] The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

***Example 23: Effect of Agonists or Antagonists of the Invention on the Expression of MHC Class II, Costimulatory and Adhesion Molecules and Cell Differentiation of Monocytes and Monocyte-Derived Human Dendritic Cells***

[01056] Dendritic cells are generated by the expansion of proliferating precursors found in the peripheral blood: adherent PBMC or elutriated monocytic fractions are cultured for 7-10 days with GM-CSF (50 ng/ml) and IL-4 (20 ng/ml). These dendritic cells have the characteristic phenotype of immature cells (expression of CD1, CD80, CD86, CD40 and MHC class II antigens). Treatment with activating factors, such as TNF- $\alpha$ , causes a rapid change in surface phenotype (increased expression of MHC class I and II, costimulatory and adhesion molecules, downregulation of FC $\gamma$ RII, upregulation of CD83). These changes correlate with increased antigen-presenting capacity and with functional maturation of the dendritic cells.

[01057] FACS analysis of surface antigens is performed as follows. Cells are treated 1-3 days with increasing concentrations of agonist or antagonist of the invention or LPS (positive control), washed with PBS containing 1% BSA and 0.02 mM sodium azide, and then incubated with 1:20 dilution of appropriate FITC- or PE-labeled monoclonal antibodies for 30 minutes at 4 degrees C. After an additional wash, the labeled cells are analyzed by flow cytometry on a FACScan (Becton Dickinson).

[01058] Effect on the production of cytokines. Cytokines generated by dendritic cells, in particular IL-12, are important in the initiation of T-cell dependent immune responses. IL-12 strongly influences the development of Th1 helper T-cell immune response, and

induces cytotoxic T and NK cell function. An ELISA is used to measure the IL-12 release as follows. Dendritic cells ( $10^6/\text{ml}$ ) are treated with increasing concentrations of agonists or antagonists of the invention for 24 hours. LPS (100 ng/ml) is added to the cell culture as positive control. Supernatants from the cell cultures are then collected and analyzed for IL-12 content using commercial ELISA kit (e.g., R & D Systems (Minneapolis, MN)). The standard protocols provided with the kits are used.

#### **Effect on the expression of MHC Class II, costimulatory and adhesion molecules.**

[01059] Three major families of cell surface antigens can be identified on monocytes: adhesion molecules, molecules involved in antigen presentation, and Fc receptor. Modulation of the expression of MHC class II antigens and other costimulatory molecules, such as B7 and ICAM-1, may result in changes in the antigen presenting capacity of monocytes and ability to induce T cell activation. Increased expression of Fc receptors may correlate with improved monocyte cytotoxic activity, cytokine release and phagocytosis.

[01060] FACS analysis is used to examine the surface antigens as follows. Monocytes are treated 1-5 days with increasing concentrations of agonists or antagonists of the invention or LPS (positive control), washed with PBS containing 1% BSA and 0.02 mM sodium azide, and then incubated with 1:20 dilution of appropriate FITC- or PE-labeled monoclonal antibodies for 30 minutes at 4 degrees C. After an additional wash, the labeled cells are analyzed by flow cytometry on a FACScan (Becton Dickinson).

#### **Monocyte activation and/or increased survival.**

[01061] Assays for molecules that activate (or alternatively, inactivate) monocytes and/or increase monocyte survival (or alternatively, decrease monocyte survival) are known in the art and may routinely be applied to determine whether a molecule of the invention functions as an inhibitor or activator of monocytes. Agonists or antagonists of the invention can be screened using the three assays described below. For each of these assays, Peripheral blood mononuclear cells (PBMC) are purified from single donor leukopacks (American Red Cross, Baltimore, MD) by centrifugation through a Histopaque

gradient (Sigma). Monocytes are isolated from PBMC by counterflow centrifugal elutriation.

### **Monocyte Survival Assay.**

[01062] Human peripheral blood monocytes progressively lose viability when cultured in absence of serum or other stimuli. Their death results from internally regulated processes (apoptosis). Addition to the culture of activating factors, such as TNF-alpha dramatically improves cell survival and prevents DNA fragmentation. Propidium iodide (PI) staining is used to measure apoptosis as follows. Monocytes are cultured for 48 hours in polypropylene tubes in serum-free medium (positive control), in the presence of 100 ng/ml TNF-alpha (negative control), and in the presence of varying concentrations of the compound to be tested. Cells are suspended at a concentration of  $2 \times 10^6$ /ml in PBS containing PI at a final concentration of 5 µg/ml, and then incubated at room temperature for 5 minutes before FACScan analysis. PI uptake has been demonstrated to correlate with DNA fragmentation in this experimental paradigm.

### **Effect on cytokine release.**

[01063] An important function of monocytes/macrophages is their regulatory activity on other cellular populations of the immune system through the release of cytokines after stimulation. An ELISA to measure cytokine release is performed as follows. Human monocytes are incubated at a density of  $5 \times 10^5$  cells/ml with increasing concentrations of agonists or antagonists of the invention and under the same conditions, but in the absence of agonists or antagonists. For IL-12 production, the cells are primed overnight with IFN (100 U/ml) in the presence of agonist or antagonist of the invention. LPS (10 ng/ml) is then added. Conditioned media are collected after 24h and kept frozen until use. Measurement of TNF-alpha, IL-10, MCP-1 and IL-8 is then performed using a commercially available ELISA kit (e.g., R & D Systems (Minneapolis, MN)) and applying the standard protocols provided with the kit.

### **Oxidative burst.**



[01064] Purified monocytes are plated in 96-w plate at  $2 \times 10^5$  cell/well. Increasing concentrations of agonists or antagonists of the invention are added to the wells in a total volume of 0.2 ml culture medium (RPMI 1640 + 10% FCS, glutamine and antibiotics). After 3 days incubation, the plates are centrifuged and the medium is removed from the wells. To the macrophage monolayers, 0.2 ml per well of phenol red solution (140 mM NaCl, 10 mM potassium phosphate buffer pH 7.0, 5.5 mM dextrose, 0.56 mM phenol red and 19 U/ml of HRPO) is added, together with the stimulant (200 nM PMA). The plates are incubated at 37°C for 2 hours and the reaction is stopped by adding 20  $\mu$ l 1N NaOH per well. The absorbance is read at 610 nm. To calculate the amount of  $H_2O_2$  produced by the macrophages, a standard curve of a  $H_2O_2$  solution of known molarity is performed for each experiment.

[01065] The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

### ***Example 24: Biological Effects of Agonists or Antagonists of the Invention***

#### **Astrocyte and Neuronal Assays.**

[01066] Agonists or antagonists of the invention, expressed in *Escherichia coli* and purified as described above, can be tested for activity in promoting the survival, neurite outgrowth, or phenotypic differentiation of cortical neuronal cells and for inducing the proliferation of glial fibrillary acidic protein immunopositive cells, astrocytes. The selection of cortical cells for the bioassay is based on the prevalent expression of FGF-1 and FGF-2 in cortical structures and on the previously reported enhancement of cortical neuronal survival resulting from FGF-2 treatment. A thymidine incorporation assay, for example, can be used to elucidate an agonist or antagonist of the invention's activity on these cells.

[01067] Moreover, previous reports describing the biological effects of FGF-2 (basic FGF) on cortical or hippocampal neurons *in vitro* have demonstrated increases in both neuron

of the gene) can be used, with or without a selectable marker and/or a negative selectable marker, to transfect cells that express polypeptides of the invention *in vivo*. In another embodiment, techniques known in the art are used to generate knockouts in cells that contain, but do not express the gene of interest. Insertion of the DNA construct, via targeted homologous recombination, results in inactivation of the targeted gene. Such approaches are particularly suited in research and agricultural fields where modifications to embryonic stem cells can be used to generate animal offspring with an inactive targeted gene (e.g., see Thomas & Capecchi 1987 and Thompson 1989, *supra*). However this approach can be routinely adapted for use in humans provided the recombinant DNA constructs are directly administered or targeted to the required site *in vivo* using appropriate viral vectors that will be apparent to those of skill in the art.

[01042] In further embodiments of the invention, cells that are genetically engineered to express the polypeptides of the invention, or alternatively, that are genetically engineered not to express the polypeptides of the invention (e.g., knockouts) are administered to a patient *in vivo*. Such cells may be obtained from the patient (i.e., animal, including human) or an MHC compatible donor and can include, but are not limited to fibroblasts, bone marrow cells, blood cells (e.g., lymphocytes), adipocytes, muscle cells, endothelial cells etc. The cells are genetically engineered *in vitro* using recombinant DNA techniques to introduce the coding sequence of polypeptides of the invention into the cells, or alternatively, to disrupt the coding sequence and/or endogenous regulatory sequence associated with the polypeptides of the invention, e.g., by transduction (using viral vectors, and preferably vectors that integrate the transgene into the cell genome) or transfection procedures, including, but not limited to, the use of plasmids, cosmids, YACs, naked DNA, electroporation, liposomes, etc. The coding sequence of the polypeptides of the invention can be placed under the control of a strong constitutive or inducible promoter or promoter/enhancer to achieve expression, and preferably secretion, of the polypeptides of the invention. The engineered cells which express and preferably secrete the polypeptides of the invention can be introduced into the patient systemically, e.g., in the circulation, or intraperitoneally.

[01043] Alternatively, the cells can be incorporated into a matrix and implanted in the body, e.g., genetically engineered fibroblasts can be implanted as part of a skin graft; genetically engineered endothelial cells can be implanted as part of a lymphatic or vascular graft.

survival and neurite outgrowth (Walicke et al., "Fibroblast growth factor promotes survival of dissociated hippocampal neurons and enhances neurite extension." Proc. Natl. Acad. Sci. USA 83:3012-3016. (1986), assay herein incorporated by reference in its entirety). However, reports from experiments done on PC-12 cells suggest that these two responses are not necessarily synonymous and may depend on not only which FGF is being tested but also on which receptor(s) are expressed on the target cells. Using the primary cortical neuronal culture paradigm, the ability of an agonist or antagonist of the invention to induce neurite outgrowth can be compared to the response achieved with FGF-2 using, for example, a thymidine incorporation assay.

#### **Fibroblast and endothelial cell assays.**

[01068] Human lung fibroblasts are obtained from Clonetics (San Diego, CA) and maintained in growth media from Clonetics. Dermal microvascular endothelial cells are obtained from Cell Applications (San Diego, CA). For proliferation assays, the human lung fibroblasts and dermal microvascular endothelial cells can be cultured at 5,000 cells/well in a 96-well plate for one day in growth medium. The cells are then incubated for one day in 0.1% BSA basal medium. After replacing the medium with fresh 0.1% BSA medium, the cells are incubated with the test proteins for 3 days. Alamar Blue (Alamar Biosciences, Sacramento, CA) is added to each well to a final concentration of 10%. The cells are incubated for 4 hr. Cell viability is measured by reading in a CytoFluor fluorescence reader. For the PGE<sub>2</sub> assays, the human lung fibroblasts are cultured at 5,000 cells/well in a 96-well plate for one day. After a medium change to 0.1% BSA basal medium, the cells are incubated with FGF-2 or agonists or antagonists of the invention with or without IL-1 $\alpha$  for 24 hours. The supernatants are collected and assayed for PGE<sub>2</sub> by EIA kit (Cayman, Ann Arbor, MI). For the IL-6 assays, the human lung fibroblasts are cultured at 5,000 cells/well in a 96-well plate for one day. After a medium change to 0.1% BSA basal medium, the cells are incubated with FGF-2 or with or without agonists or antagonists of the invention IL-1 $\alpha$  for 24 hours. The supernatants are collected and assayed for IL-6 by ELISA kit (Endogen, Cambridge, MA).

[01069] Human lung fibroblasts are cultured with FGF-2 or agonists or antagonists of the invention for 3 days in basal medium before the addition of Alamar Blue to assess effects on

growth of the fibroblasts. FGF-2 should show a stimulation at 10 - 2500 ng/ml which can be used to compare stimulation with agonists or antagonists of the invention.

### **Parkinson Models.**

[01070] The loss of motor function in Parkinson's disease is attributed to a deficiency of striatal dopamine resulting from the degeneration of the nigrostriatal dopaminergic projection neurons. An animal model for Parkinson's that has been extensively characterized involves the systemic administration of 1-methyl-4 phenyl 1,2,3,6-tetrahydropyridine (MPTP). In the CNS, MPTP is taken-up by astrocytes and catabolized by monoamine oxidase B to 1-methyl-4-phenyl pyridine ( $MPP^+$ ) and released. Subsequently,  $MPP^+$  is actively accumulated in dopaminergic neurons by the high-affinity reuptake transporter for dopamine.  $MPP^+$  is then concentrated in mitochondria by the electrochemical gradient and selectively inhibits nicotinamide adenine disphosphate: ubiquinone oxidoreductionase (complex I), thereby interfering with electron transport and eventually generating oxygen radicals.

[01071] It has been demonstrated in tissue culture paradigms that FGF-2 (basic FGF) has trophic activity towards nigral dopaminergic neurons (Ferrari et al., Dev. Biol. 1989). Recently, Dr. Unsicker's group has demonstrated that administering FGF-2 in gel foam implants in the striatum results in the near complete protection of nigral dopaminergic neurons from the toxicity associated with MPTP exposure (Otto and Unsicker, J. Neuroscience, 1990).

[01072] Based on the data with FGF-2, agonists or antagonists of the invention can be evaluated to determine whether it has an action similar to that of FGF-2 in enhancing dopaminergic neuronal survival *in vitro* and it can also be tested *in vivo* for protection of dopaminergic neurons in the striatum from the damage associated with MPTP treatment. The potential effect of an agonist or antagonist of the invention is first examined *in vitro* in a dopaminergic neuronal cell culture paradigm. The cultures are prepared by dissecting the midbrain floor plate from gestation day 14 Wistar rat embryos. The tissue is dissociated with trypsin and seeded at a density of 200,000 cells/cm<sup>2</sup> on polyorthinine-laminin coated glass coverslips. The cells are maintained in Dulbecco's Modified Eagle's medium and F12 medium containing hormonal supplements (N1). The cultures are fixed with paraformaldehyde after 8 days *in vitro* and are processed for tyrosine hydroxylase, a specific marker for dopaminergic neurons, immunohistochemical staining. Dissociated cell cultures are prepared from

embryonic rats. The culture medium is changed every third day and the factors are also added at that time.

[01073] Since the dopaminergic neurons are isolated from animals at gestation day 14, a developmental time which is past the stage when the dopaminergic precursor cells are proliferating, an increase in the number of tyrosine hydroxylase immunopositive neurons would represent an increase in the number of dopaminergic neurons surviving *in vitro*. Therefore, if an agonist or antagonist of the invention acts to prolong the survival of dopaminergic neurons, it would suggest that the agonist or antagonist may be involved in Parkinson's Disease.

[01074] The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

***Example 25: The Effect of Agonists or Antagonists of the Invention on the Growth of Vascular Endothelial Cells***

[01075] On day 1, human umbilical vein endothelial cells (HUVEC) are seeded at  $2-5 \times 10^4$  cells/35 mm dish density in M199 medium containing 4% fetal bovine serum (FBS), 16 units/ml heparin, and 50 units/ml endothelial cell growth supplements (ECGS, Biotechnology, Inc.). On day 2, the medium is replaced with M199 containing 10% FBS, 8 units/ml heparin. An agonist or antagonist of the invention, and positive controls, such as VEGF and basic FGF (bFGF) are added, at varying concentrations. On days 4 and 6, the medium is replaced. On day 8, cell number is determined with a Coulter Counter.

[01076] An increase in the number of HUVEC cells indicates that the compound of the invention may proliferate vascular endothelial cells, while a decrease in the number of HUVEC cells indicates that the compound of the invention inhibits vascular endothelial cells.

[01077] The studies described in this example tested activity of a polypeptide of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), agonists, and/or antagonists of the invention.

### ***Example 26: Rat Corneal Wound Healing Model***

[01078] This animal model shows the effect of an agonist or antagonist of the invention on neovascularization. The experimental protocol includes:

Making a 1-1.5 mm long incision from the center of cornea into the stromal layer.

Inserting a spatula below the lip of the incision facing the outer corner of the eye.

Making a pocket (its base is 1-1.5 mm from the edge of the eye).

Positioning a pellet, containing 50ng- 5ug of an agonist or antagonist of the invention, within the pocket.

Treatment with an agonist or antagonist of the invention can also be applied topically to the corneal wounds in a dosage range of 20mg - 500mg (daily treatment for five days).

[01079] The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

### ***Example 27: Diabetic Mouse and Glucocorticoid-Impaired Wound Healing***

#### ***Models***

##### *Diabetic db+/db+ Mouse Model.*

[01080] To demonstrate that an agonist or antagonist of the invention accelerates the healing process, the genetically diabetic mouse model of wound healing is used. The full thickness wound healing model in the db+/db+ mouse is a well characterized, clinically relevant and reproducible model of impaired wound healing. Healing of the diabetic wound is dependent on formation of granulation tissue and re-epithelialization rather than contraction (Gartner, M.H. et al., J. Surg. Res. 52:389 (1992); Greenhalgh, D.G. et al., Am. J. Pathol. 136:1235 (1990)).

[01081] The diabetic animals have many of the characteristic features observed in Type II diabetes mellitus. Homozygous (db+/db+) mice are obese in comparison to their normal heterozygous (db+/+m) littermates. Mutant diabetic (db+/db+) mice have a single autosomal recessive mutation on chromosome 4 (db+) (Coleman et al. Proc. Natl. Acad. Sci. USA

77:283-293 (1982)). Animals show polyphagia, polydipsia and polyuria. Mutant diabetic mice (db+/db+) have elevated blood glucose, increased or normal insulin levels, and suppressed cell-mediated immunity (Mandel et al., J. Immunol. 120:1375 (1978); Debray-Sachs, M. et al., Clin. Exp. Immunol. 51(1):1-7 (1983); Leiter et al., Am. J. of Pathol. 114:46-55 (1985)). Peripheral neuropathy, myocardial complications, and microvascular lesions, basement membrane thickening and glomerular filtration abnormalities have been described in these animals (Norido, F. et al., Exp. Neurol. 83(2):221-232 (1984); Robertson et al., Diabetes 29(1):60-67 (1980); Giacomelli et al., Lab Invest. 40(4):460-473 (1979); Coleman, D.L., Diabetes 31 (Suppl):1-6 (1982)). These homozygous diabetic mice develop hyperglycemia that is resistant to insulin analogous to human type II diabetes (Mandel et al., J. Immunol. 120:1375-1377 (1978)).

**[01082]** The characteristics observed in these animals suggests that healing in this model may be similar to the healing observed in human diabetes (Greenhalgh, et al., Am. J. of Pathol. 136:1235-1246 (1990)).

**[01083]** Genetically diabetic female C57BL/KsJ (db+/db+) mice and their non-diabetic (db+/+m) heterozygous littermates are used in this study (Jackson Laboratories). The animals are purchased at 6 weeks of age and are 8 weeks old at the beginning of the study. Animals are individually housed and received food and water ad libitum. All manipulations are performed using aseptic techniques. The experiments are conducted according to the rules and guidelines of Human Genome Sciences, Inc. Institutional Animal Care and Use Committee and the Guidelines for the Care and Use of Laboratory Animals.

**[01084]** Wounding protocol is performed according to previously reported methods (Tsuboi, R. and Rifkin, D.B., J. Exp. Med. 172:245-251 (1990)). Briefly, on the day of wounding, animals are anesthetized with an intraperitoneal injection of Avertin (0.01 mg/mL), 2,2,2-tribromoethanol and 2-methyl-2-butanol dissolved in deionized water. The dorsal region of the animal is shaved and the skin washed with 70% ethanol solution and iodine. The surgical area is dried with sterile gauze prior to wounding. An 8 mm full-thickness wound is then created using a Keyes tissue punch. Immediately following wounding, the surrounding skin is gently stretched to eliminate wound expansion. The wounds are left open for the duration of the experiment. Application of the treatment is given topically for 5 consecutive days commencing on the day of wounding. Prior to treatment, wounds are gently cleansed with sterile saline and gauze sponges.

- [01085] Wounds are visually examined and photographed at a fixed distance at the day of surgery and at two day intervals thereafter. Wound closure is determined by daily measurement on days 1-5 and on day 8. Wounds are measured horizontally and vertically using a calibrated Jameson caliper. Wounds are considered healed if granulation tissue is no longer visible and the wound is covered by a continuous epithelium.
- [01086] An agonist or antagonist of the invention is administered using at a range different doses, from 4mg to 500mg per wound per day for 8 days in vehicle. Vehicle control groups received 50mL of vehicle solution.
- [01087] Animals are euthanized on day 8 with an intraperitoneal injection of sodium pentobarbital (300mg/kg). The wounds and surrounding skin are then harvested for histology and immunohistochemistry. Tissue specimens are placed in 10% neutral buffered formalin in tissue cassettes between biopsy sponges for further processing.
- [01088] Three groups of 10 animals each (5 diabetic and 5 non-diabetic controls) are evaluated: 1) Vehicle placebo control, 2) untreated group, and 3) treated group.
- [01089] Wound closure is analyzed by measuring the area in the vertical and horizontal axis and obtaining the total square area of the wound. Contraction is then estimated by establishing the differences between the initial wound area (day 0) and that of post treatment (day 8). The wound area on day 1 is 64mm<sup>2</sup>, the corresponding size of the dermal punch. Calculations are made using the following formula:

$$[\text{Open area on day 8}] - [\text{Open area on day 1}] / [\text{Open area on day 1}]$$

- [01090] Specimens are fixed in 10% buffered formalin and paraffin embedded blocks are sectioned perpendicular to the wound surface (5mm) and cut using a Reichert-Jung microtome. Routine hematoxylin-eosin (H&E) staining is performed on cross-sections of bisected wounds. Histologic examination of the wounds are used to assess whether the healing process and the morphologic appearance of the repaired skin is altered by treatment with an agonist or antagonist of the invention. This assessment included verification of the presence of cell accumulation, inflammatory cells, capillaries, fibroblasts, re-epithelialization and epidermal maturity (Greenhalgh, D.G. *et al.*, *Am. J. Pathol.* 136:1235 (1990)). A calibrated lens micrometer is used by a blinded observer.



- [01091] Tissue sections are also stained immunohistochemically with a polyclonal rabbit anti-human keratin antibody using ABC Elite detection system. Human skin is used as a positive tissue control while non-immune IgG is used as a negative control. Keratinocyte growth is determined by evaluating the extent of reepithelialization of the wound using a calibrated lens micrometer.
- [01092] Proliferating cell nuclear antigen/cyclin (PCNA) in skin specimens is demonstrated by using anti-PCNA antibody (1:50) with an ABC Elite detection system. Human colon cancer served as a positive tissue control and human brain tissue is used as a negative tissue control. Each specimen included a section with omission of the primary antibody and substitution with non-immune mouse IgG. Ranking of these sections is based on the extent of proliferation on a scale of 0-8, the lower side of the scale reflecting slight proliferation to the higher side reflecting intense proliferation.
- [01093] Experimental data are analyzed using an unpaired t test. A p value of < 0.05 is considered significant.

#### *Steroid Impaired Rat Model*

- [01094] The inhibition of wound healing by steroids has been well documented in various *in vitro* and *in vivo* systems (Wahl, Glucocorticoids and Wound healing. In: Anti-Inflammatory Steroid Action: Basic and Clinical Aspects. 280-302 (1989); Wahl et al., J. Immunol. 115: 476-481 (1975); Werb et al., J. Exp. Med. 147:1684-1694 (1978)). Glucocorticoids retard wound healing by inhibiting angiogenesis, decreasing vascular permeability (Ebert et al., An. Intern. Med. 37:701-705 (1952)), fibroblast proliferation, and collagen synthesis (Beck et al., Growth Factors. 5: 295-304 (1991); Haynes et al., J. Clin. Invest. 61: 703-797 (1978)) and producing a transient reduction of circulating monocytes (Haynes et al., J. Clin. Invest. 61: 703-797 (1978); Wahl, "Glucocorticoids and wound healing", In: Antiinflammatory Steroid Action: Basic and Clinical Aspects, Academic Press, New York, pp. 280-302 (1989)). The systemic administration of steroids to impaired wound healing is a well establish phenomenon in rats (Beck et al., Growth Factors. 5: 295-304 (1991); Haynes et al., J. Clin. Invest. 61: 703-797 (1978); Wahl, "Glucocorticoids and wound healing", In: Antiinflammatory Steroid Action: Basic and Clinical Aspects, Academic Press, New York, pp. 280-302 (1989); Pierce et al., Proc. Natl. Acad. Sci. USA 86: 2229-2233 (1989)).

- [01095] To demonstrate that an agonist or antagonist of the invention can accelerate the healing process, the effects of multiple topical applications of the agonist or antagonist on full thickness excisional skin wounds in rats in which healing has been impaired by the systemic administration of methylprednisolone is assessed.
- [01096] Young adult male Sprague Dawley rats weighing 250-300 g (Charles River Laboratories) are used in this example. The animals are purchased at 8 weeks of age and are 9 weeks old at the beginning of the study. The healing response of rats is impaired by the systemic administration of methylprednisolone (17mg/kg/rat intramuscularly) at the time of wounding. Animals are individually housed and received food and water *ad libitum*. All manipulations are performed using aseptic techniques. This study is conducted according to the rules and guidelines of Human Genome Sciences, Inc. Institutional Animal Care and Use Committee and the Guidelines for the Care and Use of Laboratory Animals.
- [01097] The wounding protocol is followed according to section A, above. On the day of wounding, animals are anesthetized with an intramuscular injection of ketamine (50 mg/kg) and xylazine (5 mg/kg). The dorsal region of the animal is shaved and the skin washed with 70% ethanol and iodine solutions. The surgical area is dried with sterile gauze prior to wounding. An 8 mm full-thickness wound is created using a Keyes tissue punch. The wounds are left open for the duration of the experiment. Applications of the testing materials are given topically once a day for 7 consecutive days commencing on the day of wounding and subsequent to methylprednisolone administration. Prior to treatment, wounds are gently cleansed with sterile saline and gauze sponges.
- [01098] Wounds are visually examined and photographed at a fixed distance at the day of wounding and at the end of treatment. Wound closure is determined by daily measurement on days 1-5 and on day 8. Wounds are measured horizontally and vertically using a calibrated Jameson caliper. Wounds are considered healed if granulation tissue is no longer visible and the wound is covered by a continuous epithelium.
- [01099] The agonist or antagonist of the invention is administered using at a range different doses, from 4mg to 500mg per wound per day for 8 days in vehicle. Vehicle control groups received 50mL of vehicle solution.
- [01100] Animals are euthanized on day 8 with an intraperitoneal injection of sodium pentobarbital (300mg/kg). The wounds and surrounding skin are then harvested for histology.

Tissue specimens are placed in 10% neutral buffered formalin in tissue cassettes between biopsy sponges for further processing.

[01101] Three groups of 10 animals each (5 with methylprednisolone and 5 without glucocorticoid) are evaluated: 1) Untreated group 2) Vehicle placebo control 3) treated groups.

[01102] Wound closure is analyzed by measuring the area in the vertical and horizontal axis and obtaining the total area of the wound. Closure is then estimated by establishing the differences between the initial wound area (day 0) and that of post treatment (day 8). The wound area on day 1 is  $64\text{mm}^2$ , the corresponding size of the dermal punch. Calculations are made using the following formula:

$$[\text{Open area on day 8}] - [\text{Open area on day 1}] / [\text{Open area on day 1}]$$

[01103] Specimens are fixed in 10% buffered formalin and paraffin embedded blocks are sectioned perpendicular to the wound surface (5mm) and cut using an Olympus microtome. Routine hematoxylin-eosin (H&E) staining is performed on cross-sections of bisected wounds. Histologic examination of the wounds allows assessment of whether the healing process and the morphologic appearance of the repaired skin is improved by treatment with an agonist or antagonist of the invention. A calibrated lens micrometer is used by a blinded observer to determine the distance of the wound gap.

[01104] Experimental data are analyzed using an unpaired t test. A p value of  $< 0.05$  is considered significant.

[01105] The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

### ***Example 28: Lymphadema Animal Model***

[01106] The purpose of this experimental approach is to create an appropriate and consistent lymphedema model for testing the therapeutic effects of an agonist or antagonist of the invention in lymphangiogenesis and re-establishment of the lymphatic circulatory system in the rat hind limb. Effectiveness is measured by swelling volume of the affected limb,

quantification of the amount of lymphatic vasculature, total blood plasma protein, and histopathology. Acute lymphedema is observed for 7-10 days. Perhaps more importantly, the chronic progress of the edema is followed for up to 3-4 weeks.

[01107] Prior to beginning surgery, blood sample is drawn for protein concentration analysis. Male rats weighing approximately ~350g are dosed with Pentobarbital. Subsequently, the right legs are shaved from knee to hip. The shaved area is swabbed with gauze soaked in 70% EtOH. Blood is drawn for serum total protein testing. Circumference and volumetric measurements are made prior to injecting dye into paws after marking 2 measurement levels (0.5 cm above heel, at mid-pt of dorsal paw). The intradermal dorsum of both right and left paws are injected with 0.05 ml of 1% Evan's Blue. Circumference and volumetric measurements are then made following injection of dye into paws.

[01108] Using the knee joint as a landmark, a mid-leg inguinal incision is made circumferentially allowing the femoral vessels to be located. Forceps and hemostats are used to dissect and separate the skin flaps. After locating the femoral vessels, the lymphatic vessel that runs along side and underneath the vessel(s) is located. The main lymphatic vessels in this area are then electrically coagulated or suture ligated.

[01109] Using a microscope, muscles in back of the leg (near the semitendinosus and adductors) are bluntly dissected. The popliteal lymph node is then located. The 2 proximal and 2 distal lymphatic vessels and distal blood supply of the popliteal node are then ligated by suturing. The popliteal lymph node, and any accompanying adipose tissue, is then removed by cutting connective tissues.

[01110] Care is taken to control any mild bleeding resulting from this procedure. After lymphatics are occluded, the skin flaps are sealed by using liquid skin (Vetbond) (AJ Buck). The separated skin edges are sealed to the underlying muscle tissue while leaving a gap of ~0.5 cm around the leg. Skin also may be anchored by suturing to underlying muscle when necessary.

[01111] To avoid infection, animals are housed individually with mesh (no bedding). Recovering animals are checked daily through the optimal edematous peak, which typically occurred by day 5-7. The plateau edematous peak are then observed. To evaluate the intensity of the lymphedema, the circumference and volumes of 2 designated places on each paw before operation and daily for 7 days are measured. The effect of plasma proteins on lymphedema is determined and whether protein analysis is a useful testing perimeter is also investigated. The

weights of both control and edematous limbs are evaluated at 2 places. Analysis is performed in a blind manner.

[01112] Circumference Measurements: Under brief gas anesthetic to prevent limb movement, a cloth tape is used to measure limb circumference. Measurements are done at the ankle bone and dorsal paw by 2 different people and those 2 readings are averaged. Readings are taken from both control and edematous limbs.

[01113] Volumetric Measurements: On the day of surgery, animals are anesthetized with Pentobarbital and are tested prior to surgery. For daily volumetrics animals are under brief halothane anesthetic (rapid immobilization and quick recovery), and both legs are shaved and equally marked using waterproof marker on legs. Legs are first dipped in water, then dipped into instrument to each marked level, then measured by Buxco edema software(Chen/Victor). Data is recorded by one person, while the other is dipping the limb to marked area.

[01114] Blood-plasma protein measurements: Blood is drawn, spun, and serum separated prior to surgery and then at conclusion for total protein and  $\text{Ca}^{2+}$  comparison.

[01115] Limb Weight Comparison: After drawing blood, the animal is prepared for tissue collection. The limbs are amputated using a quillitine, then both experimental and control legs are cut at the ligature and weighed. A second weighing is done as the tibio-cacaneal joint is disarticulated and the foot is weighed.

[01116] Histological Preparations: The transverse muscle located behind the knee (popliteal) area is dissected and arranged in a metal mold, filled with freezeGel, dipped into cold methylbutane, placed into labeled sample bags at - 80EC until sectioning. Upon sectioning, the muscle is observed under fluorescent microscopy for lymphatics..

[01117] The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

***Example 29: Suppression of TNF alpha-induced adhesion molecule expression by a Agonist or Antagonist of the Invention***

[01118] The recruitment of lymphocytes to areas of inflammation and angiogenesis involves specific receptor-ligand interactions between cell surface adhesion molecules (CAMs)

on lymphocytes and the vascular endothelium. The adhesion process, in both normal and pathological settings, follows a multi-step cascade that involves intercellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1 (VCAM-1), and endothelial leukocyte adhesion molecule-1 (E-selectin) expression on endothelial cells (EC). The expression of these molecules and others on the vascular endothelium determines the efficiency with which leukocytes may adhere to the local vasculature and extravasate into the local tissue during the development of an inflammatory response. The local concentration of cytokines and growth factor participate in the modulation of the expression of these CAMs.

[01119] Tumor necrosis factor alpha (TNF-a), a potent proinflammatory cytokine, is a stimulator of all three CAMs on endothelial cells and may be involved in a wide variety of inflammatory responses, often resulting in a pathological outcome.

[01120] The potential of an agonist or antagonist of the invention to mediate a suppression of TNF-a induced CAM expression can be examined. A modified ELISA assay which uses ECs as a solid phase absorbent is employed to measure the amount of CAM expression on TNF-a treated ECs when co-stimulated with a member of the FGF family of proteins.

[01121] To perform the experiment, human umbilical vein endothelial cell (HUVEC) cultures are obtained from pooled cord harvests and maintained in growth medium (EGM-2; Clonetics, San Diego, CA) supplemented with 10% FCS and 1% penicillin/streptomycin in a 37 degree C humidified incubator containing 5% CO<sub>2</sub>. HUVECs are seeded in 96-well plates at concentrations of  $1 \times 10^4$  cells/well in EGM medium at 37 degree C for 18-24 hrs or until confluent. The monolayers are subsequently washed 3 times with a serum-free solution of RPMI-1640 supplemented with 100 U/ml penicillin and 100 mg/ml streptomycin, and treated with a given cytokine and/or growth factor(s) for 24 h at 37 degree C. Following incubation, the cells are then evaluated for CAM expression.

[01122] Human Umbilical Vein Endothelial cells (HUVECs) are grown in a standard 96 well plate to confluence. Growth medium is removed from the cells and replaced with 90 ul of 199 Medium (10% FBS). Samples for testing and positive or negative controls are added to the plate in triplicate (in 10 ul volumes). Plates are incubated at 37 degree C for either 5 h (selectin and integrin expression) or 24 h (integrin expression only). Plates are aspirated to remove medium and 100  $\mu$ l of 0.1% paraformaldehyde-PBS(with Ca<sup>++</sup> and Mg<sup>++</sup>) is added to each well. Plates are held at 4°C for 30 min.

[01123] Fixative is then removed from the wells and wells are washed 1X with PBS(+Ca,Mg)+0.5% BSA and drained. Do not allow the wells to dry. Add 10  $\mu$ l of diluted primary antibody to the test and control wells. Anti-ICAM-1-Biotin, Anti-VCAM-1-Biotin and Anti-E-selectin-Biotin are used at a concentration of 10  $\mu$ g/ml (1:10 dilution of 0.1 mg/ml stock antibody). Cells are incubated at 37°C for 30 min. in a humidified environment. Wells are washed X3 with PBS(+Ca,Mg)+0.5% BSA.

[01124] Then add 20  $\mu$ l of diluted ExtrAvidin-Alkaline Phosphatase (1:5,000 dilution) to each well and incubated at 37°C for 30 min. Wells are washed X3 with PBS(+Ca,Mg)+0.5% BSA. 1 tablet of p-Nitrophenol Phosphate pNPP is dissolved in 5 ml of glycine buffer (pH 10.4). 100  $\mu$ l of pNPP substrate in glycine buffer is added to each test well. Standard wells in triplicate are prepared from the working dilution of the ExtrAvidin-Alkaline Phosphatase in glycine buffer:  $1:5,000 (10^0) > 10^{-0.5} > 10^{-1} > 10^{-1.5}$ . 5  $\mu$ l of each dilution is added to triplicate wells and the resulting AP content in each well is 5.50 ng, 1.74 ng, 0.55 ng, 0.18 ng. 100  $\mu$ l of pNPP reagent must then be added to each of the standard wells. The plate must be incubated at 37°C for 4h. A volume of 50  $\mu$ l of 3M NaOH is added to all wells. The results are quantified on a plate reader at 405 nm. The background subtraction option is used on blank wells filled with glycine buffer only. The template is set up to indicate the concentration of AP-conjugate in each standard well [ 5.50 ng; 1.74 ng; 0.55 ng; 0.18 ng]. Results are indicated as amount of bound AP-conjugate in each sample.

[01125] The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

### ***Example 30: Production Of Polypeptide of the Invention For High-Throughput Screening Assays***

[01126] The following protocol produces a supernatant containing polypeptide of the present invention to be tested. This supernatant can then be used in the Screening Assays described in Examples 32-41.

[01127] First, dilute Poly-D-Lysine (644 587 Boehringer-Mannheim) stock solution (1mg/ml in PBS) 1:20 in PBS (w/o calcium or magnesium 17-516F Biowhittaker) for a

working solution of 50ug/ml. Add 200 ul of this solution to each well (24 well plates) and incubate at RT for 20 minutes. Be sure to distribute the solution over each well (note: a 12-channel pipetter may be used with tips on every other channel). Aspirate off the Poly-D-Lysine solution and rinse with 1ml PBS (Phosphate Buffered Saline). The PBS should remain in the well until just prior to plating the cells and plates may be poly-lysine coated in advance for up to two weeks.

**[01128]** Plate 293T cells (do not carry cells past P+20) at  $2 \times 10^5$  cells/well in .5ml DMEM(Dulbecco's Modified Eagle Medium)(with 4.5 G/L glucose and L-glutamine (12-604F Biowhittaker))/10% heat inactivated FBS(14-503F Biowhittaker)/1x Penstrep(17-602E Biowhittaker). Let the cells grow overnight.

**[01129]** The next day, mix together in a sterile solution basin: 300 ul Lipofectamine (18324-012 Gibco/BRL) and 5ml Optimem I (31985070 Gibco/BRL)/96-well plate. With a small volume multi-channel pipetter, aliquot approximately 2ug of an expression vector containing a polynucleotide insert, produced by the methods described in Examples 8-10, into an appropriately labeled 96-well round bottom plate. With a multi-channel pipetter, add 50ul of the Lipofectamine/Optimem I mixture to each well. Pipette up and down gently to mix. Incubate at RT 15-45 minutes. After about 20 minutes, use a multi-channel pipetter to add 150ul Optimem I to each well. As a control, one plate of vector DNA lacking an insert should be transfected with each set of transfections.

**[01130]** Preferably, the transfection should be performed by tag-teaming the following tasks. By tag-teaming, hands on time is cut in half, and the cells do not spend too much time on PBS. First, person A aspirates off the media from four 24-well plates of cells, and then person B rinses each well with .5-1ml PBS. Person A then aspirates off PBS rinse, and person B, using a 12-channel pipetter with tips on every other channel, adds the 200ul of DNA/Lipofectamine/Optimem I complex to the odd wells first, then to the even wells, to each row on the 24-well plates. Incubate at 37 degree C for 6 hours.

**[01131]** While cells are incubating, prepare appropriate media, either 1%BSA in DMEM with 1x penstrep, or HGS CHO-5 media (116.6 mg/L of  $\text{CaCl}_2$  (anhyd); 0.00130 mg/L  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ ; 0.050 mg/L of  $\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$ ; 0.417 mg/L of  $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ ; 311.80 mg/L of KCl; 28.64 mg/L of  $\text{MgCl}_2$ ; 48.84 mg/L of  $\text{MgSO}_4$ ; 6995.50 mg/L of NaCl; 2400.0 mg/L of  $\text{NaHCO}_3$ ; 62.50 mg/L of  $\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$ ; 71.02 mg/L of



Na<sub>2</sub>HPO<sub>4</sub>; .4320 mg/L of ZnSO<sub>4</sub>·7H<sub>2</sub>O; .002 mg/L of Arachidonic Acid ; 1.022 mg/L of Cholesterol; .070 mg/L of DL- $\alpha$ -Tocopherol-Acetate; 0.0520 mg/L of Linoleic Acid; 0.010 mg/L of Linolenic Acid; 0.010 mg/L of Myristic Acid; 0.010 mg/L of Oleic Acid; 0.010 mg/L of Palmitic Acid; 0.010 mg/L of Palmitic Acid; 100 mg/L of Pluronic F-68; 0.010 mg/L of Stearic Acid; 2.20 mg/L of Tween 80; 4551 mg/L of D-Glucose; 130.85 mg/ml of L- Alanine; 147.50 mg/ml of L-Arginine-HCL; 7.50 mg/ml of L-Asparagine-H<sub>2</sub>O; 6.65 mg/ml of L-Aspartic Acid; 29.56 mg/ml of L-Cystine-2HCL-H<sub>2</sub>O; 31.29 mg/ml of L-Cystine-2HCL; 7.35 mg/ml of L-Glutamic Acid; 365.0 mg/ml of L-Glutamine; 18.75 mg/ml of Glycine; 52.48 mg/ml of L-Histidine-HCL-H<sub>2</sub>O; 106.97 mg/ml of L-Isoleucine; 111.45 mg/ml of L-Leucine; 163.75 mg/ml of L-Lysine HCL; 32.34 mg/ml of L-Methionine; 68.48 mg/ml of L-Phenylalanine; 40.0 mg/ml of L-Proline; 26.25 mg/ml of L-Serine; 101.05 mg/ml of L-Threonine; 19.22 mg/ml of L-Tryptophan; 91.79 mg/ml of L-Tyrosine-2Na-2H<sub>2</sub>O; and 99.65 mg/ml of L-Valine; 0.0035 mg/L of Biotin; 3.24 mg/L of D-Ca Pantothenate; 11.78 mg/L of Choline Chloride; 4.65 mg/L of Folic Acid; 15.60 mg/L of i-Inositol; 3.02 mg/L of Niacinamide; 3.00 mg/L of Pyridoxal HCL; 0.031 mg/L of Pyridoxine HCL; 0.319 mg/L of Riboflavin; 3.17 mg/L of Thiamine HCL; 0.365 mg/L of Thymidine; 0.680 mg/L of Vitamin B<sub>12</sub>; 25 mM of HEPES Buffer; 2.39 mg/L of Na Hypoxanthine; 0.105 mg/L of Lipoic Acid; 0.081 mg/L of Sodium Putrescine-2HCL; 55.0 mg/L of Sodium Pyruvate; 0.0067 mg/L of Sodium Selenite; 20uM of Ethanolamine; 0.122 mg/L of Ferric Citrate; 41.70 mg/L of Methyl-B-Cyclodextrin complexed with Linoleic Acid; 33.33 mg/L of Methyl-B-Cyclodextrin complexed with Oleic Acid; 10 mg/L of Methyl-B-Cyclodextrin complexed with Retinal Acetate. Adjust osmolarity to 327 mOsm) with 2mm glutamine and 1x penstrep. (BSA (81-068-3 Bayer) 100gm dissolved in 1L DMEM for a 10% BSA stock solution). Filter the media and collect 50 ul for endotoxin assay in 15ml polystyrene conical.

[01132] The transfection reaction is terminated, preferably by tag-teaming, at the end of the incubation period. Person A aspirates off the transfection media, while person B adds 1.5ml appropriate media to each well. Incubate at 37 degree C for 45 or 72 hours depending on the media used: 1%BSA for 45 hours or CHO-5 for 72 hours.

- [01133] On day four, using a 300ul multichannel pipetter, aliquot 600ul in one 1ml deep well plate and the remaining supernatant into a 2ml deep well. The supernatants from each well can then be used in the assays described in Examples 32-39.
- [01134] It is specifically understood that when activity is obtained in any of the assays described below using a supernatant, the activity originates from either the polypeptide of the present invention directly (e.g., as a secreted protein) or by polypeptide of the present invention inducing expression of other proteins, which are then secreted into the supernatant. Thus, the invention further provides a method of identifying the protein in the supernatant characterized by an activity in a particular assay.

### *Example 31: Construction of GAS Reporter Construct*

- [01135] One signal transduction pathway involved in the differentiation and proliferation of cells is called the Jaks-STATs pathway. Activated proteins in the Jaks-STATs pathway bind to gamma activation site "GAS" elements or interferon-sensitive responsive element ("ISRE"), located in the promoter of many genes. The binding of a protein to these elements alter the expression of the associated gene.
- [01136] GAS and ISRE elements are recognized by a class of transcription factors called Signal Transducers and Activators of Transcription, or "STATs." There are six members of the STATs family. Stat1 and Stat3 are present in many cell types, as is Stat2 (as response to IFN-alpha is widespread). Stat4 is more restricted and is not in many cell types though it has been found in T helper class I, cells after treatment with IL-12. Stat5 was originally called mammary growth factor, but has been found at higher concentrations in other cells including myeloid cells. It can be activated in tissue culture cells by many cytokines.
- [01137] The STATs are activated to translocate from the cytoplasm to the nucleus upon tyrosine phosphorylation by a set of kinases known as the Janus Kinase ("Jaks") family. Jaks represent a distinct family of soluble tyrosine kinases and include Tyk2, Jak1, Jak2, and Jak3. These kinases display significant sequence similarity and are generally catalytically inactive in resting cells.
- [01138] The Jaks are activated by a wide range of receptors summarized in the Table below. (Adapted from review by Schidler and Darnell, Ann. Rev. Biochem. 64:621-51 2990)

(1995).) A cytokine receptor family, capable of activating Jaks, is divided into two groups: (a) Class 1 includes receptors for IL-2, IL-3, IL-4, IL-6, IL-7, IL-9, IL-11, IL-12, IL-15, Epo, PRL, GH, G-CSF, GM-CSF, LIF, CNTF, and thrombopoietin; and (b) Class 2 includes IFN- $\alpha$ , IFN- $\gamma$ , and IL-10. The Class 1 receptors share a conserved cysteine motif (a set of four conserved cysteines and one tryptophan) and a WSXWS motif (a membrane proximal region encoding Trp-Ser-Xaa-Trp-Ser (SEQ ID NO:2)).

[01139] Thus, on binding of a ligand to a receptor, Jaks are activated, which in turn activate STATs, which then translocate and bind to GAS elements. This entire process is encompassed in the Jaks-STATs signal transduction pathway.

[01140] Therefore, activation of the Jaks-STATs pathway, reflected by the binding of the GAS or the ISRE element, can be used to indicate proteins involved in the proliferation and differentiation of cells. For example, growth factors and cytokines are known to activate the Jaks-STATs pathway. (See Table below.) Thus, by using GAS elements linked to reporter molecules, activators of the Jaks-STATs pathway can be identified.

<u>Ligand</u>	<u>tyk2</u>	<u>JAKs</u>			<u>STATs</u>	<u>GAS(elements) or ISRE</u>
		<u>Jak1</u>	<u>Jak2</u>	<u>Jak3</u>		
<u>IFN family</u>						
IFN-a/B	+	+	-	-	1,2,3	ISRE
IFN-g		+	+	-	1	GAS (IRF1>Lys6>IFP)
Il-10	+	?	?	-	1,3	
<u>gp130 family</u>						
IL-6 (Pleiotropic)	+	+	+	?	1,3	GAS (IRF1>Lys6>IFP)
IL-11(Pleiotropic)	?	+	?	?	1,3	
OnM(Pleiotropic)	?	+	+	?	1,3	
LIF(Pleiotropic) ?	+	+	?	1,3		
CNTF(Pleiotropic)	-/+	+	+	?	1,3	
G-CSF(Pleiotropic)	?	+	?	?	1,3	
IL-12(Pleiotropic)	+	-	+	+	1,3	
<u>g-C family</u>						
IL-2 (lymphocytes)	-	+	-	+	1,3,5	GAS
IL-4 (lymph/myeloid) >>Ly6(IgH)	-	+	-	+	6	GAS(IRF1=IFP)
IL-7 (lymphocytes)	-	+	-	+	5	GAS
IL-9 (lymphocytes)	-	+	-	+	5	GAS
IL-13 (lymphocyte)	-	+	?	?	6	GAS
IL-15	?	+	?	+	5	GAS
<u>gp140 family</u>						
IL-3 (myeloid)	-	-	+	-	5	GAS (IRF1>IFP>>Ly6)
IL-5 (myeloid)	-	-	+	-	5	GAS
GM-CSF (myeloid)	-	-	+	-	5	GAS
<u>Growth hormone family</u>						
GH	?	-	+	-	5	
PRL	?	+/-	+	-	1,3,5	
EPO	?	-	+	-	5	GAS (B-CAS>IRF1=IFP>>Ly6)
<u>Receptor Tyrosine Kinases</u>						
EGF	?	+	+	-	1,3	GAS (IRF1)
PDGF	?	+	+	-	1,3	
CSF-1	?	+	+	-	1,3	GAS (not IRF1)

[01141] To construct a synthetic GAS containing promoter element, which is used in the Biological Assays described in Examples 32-33, a PCR based strategy is employed to generate a GAS-SV40 promoter sequence. The 5' primer contains four tandem copies of the GAS binding site found in the IRF1 promoter and previously demonstrated to bind STATs upon induction with a range of cytokines (Rothman et al., *Immunity* 1:457-468 (1994).), although other GAS or ISRE elements can be used instead. The 5' primer also contains 18bp of sequence complementary to the SV40 early promoter sequence and is flanked with an XhoI site. The sequence of the 5' primer is:

5':GCGCCTCGAGATTTCCCGGAAATCTAGATTTCCCGGAAATGATTTCCTCGGAAATGATTTCCTCGGAAATATCTGCCATCTCAATTAG:3' (SEQ ID NO: 3)

[01142] The downstream primer is complementary to the SV40 promoter and is flanked with a Hind III site: 5':GCGGCAAGCTTTTGTCAAAGCCTAGGC:3' (SEQ ID NO: 4)

[01143] PCR amplification is performed using the SV40 promoter template present in the B-gal:promoter plasmid obtained from Clontech. The resulting PCR fragment is digested with XhoI/Hind III and subcloned into BLSK2-. (Stratagene.) Sequencing with forward and reverse primers confirms that the insert contains the following sequence:

5':CTCGAGATTTCCCGGAAATCTAGATTTCCCGGAAATGATTTCCTCGGAAATG  
ATTTCCCGGAAATATCTGCCATCTCAATTAGTCAGCAACCATAGTCCCGCCCC  
TAACTCCGCCCATCCCGCCCCCTAACTCCGCCCAGTTCGCCCATTTCTCCGCC  
CATGGCTGACTAATTTTTTTTATTTATGCAGAGGCCGAGGCCGCCTCGGCCTC  
TGAGCTATTCCAGAAGTAGTGAGGAGGCTTTTTTGAGGCCTAGGCTTTTGC  
AAAAAGCTT:3' (SEQ ID NO: 5)

[01144] With this GAS promoter element linked to the SV40 promoter, a GAS:SEAP2 reporter construct is next engineered. Here, the reporter molecule is a secreted alkaline phosphatase, or "SEAP." Clearly, however, any reporter molecule can be used instead of SEAP, in this or in any of the other Examples. Well known reporter molecules that can be used instead of SEAP include chloramphenicol acetyltransferase (CAT), luciferase, alkaline phosphatase, B-galactosidase, green fluorescent protein (GFP), or any protein detectable by an antibody.

[01145] The above sequence confirmed synthetic GAS-SV40 promoter element is subcloned into the pSEAP-Promoter vector obtained from Clontech using HindIII and

XhoI, effectively replacing the SV40 promoter with the amplified GAS:SV40 promoter element, to create the GAS-SEAP vector. However, this vector does not contain a neomycin resistance gene, and therefore, is not preferred for mammalian expression systems.

[01146] Thus, in order to generate mammalian stable cell lines expressing the GAS-SEAP reporter, the GAS-SEAP cassette is removed from the GAS-SEAP vector using SalI and NotI, and inserted into a backbone vector containing the neomycin resistance gene, such as pGFP-1 (Clontech), using these restriction sites in the multiple cloning site, to create the GAS-SEAP/Neo vector. Once this vector is transfected into mammalian cells, this vector can then be used as a reporter molecule for GAS binding as described in Examples 32-33.

[01147] Other constructs can be made using the above description and replacing GAS with a different promoter sequence. For example, construction of reporter molecules containing NFK-B and EGR promoter sequences are described in Examples 34 and 35. However, many other promoters can be substituted using the protocols described in these Examples. For instance, SRE, IL-2, NFAT, or Osteocalcin promoters can be substituted, alone or in combination (e.g., GAS/NF-KB/EGR, GAS/NF-KB, IL-2/NFAT, or NF-KB/GAS). Similarly, other cell lines can be used to test reporter construct activity, such as HELA (epithelial), HUVEC (endothelial), Reh (B-cell), Saos-2 (osteoblast), HUVAC (aortic), or Cardiomyocyte.

### ***Example 32: High-Throughput Screening Assay for T-cell Activity.***

[01148] The following protocol is used to assess T-cell activity by identifying factors, and determining whether supernate containing a polypeptide of the invention proliferates and/or differentiates T-cells. T-cell activity is assessed using the GAS/SEAP/Neo construct produced in Example 31. Thus, factors that increase SEAP activity indicate the ability to activate the Jaks-STATS signal transduction pathway. The T-cell used in this assay is Jurkat T-cells (ATCC Accession No. TIB-152), although Molt-3 cells (ATCC Accession No. CRL-1552) and Molt-4 cells (ATCC Accession No. CRL-1582) cells can also be used.

- [01149] Jurkat T-cells are lymphoblastic CD4+ Th1 helper cells. In order to generate stable cell lines, approximately 2 million Jurkat cells are transfected with the GAS-SEAP/neo vector using DMRIE-C (Life Technologies)(transfection procedure described below). The transfected cells are seeded to a density of approximately 20,000 cells per well and transfectants resistant to 1 mg/ml gentamicin selected. Resistant colonies are expanded and then tested for their response to increasing concentrations of interferon gamma. The dose response of a selected clone is demonstrated.
- [01150] Specifically, the following protocol will yield sufficient cells for 75 wells containing 200 ul of cells. Thus, it is either scaled up, or performed in multiple to generate sufficient cells for multiple 96 well plates. Jurkat cells are maintained in RPMI + 10% serum with 1%Pen-Strep. Combine 2.5 mls of OPTI-MEM (Life Technologies) with 10 ug of plasmid DNA in a T25 flask. Add 2.5 ml OPTI-MEM containing 50 ul of DMRIE-C and incubate at room temperature for 15-45 mins.
- [01151] During the incubation period, count cell concentration, spin down the required number of cells ( $10^7$  per transfection), and resuspend in OPTI-MEM to a final concentration of  $10^7$  cells/ml. Then add 1ml of  $1 \times 10^7$  cells in OPTI-MEM to T25 flask and incubate at 37 degree C for 6 hrs. After the incubation, add 10 ml of RPMI + 15% serum.
- [01152] The Jurkat:GAS-SEAP stable reporter lines are maintained in RPMI + 10% serum, 1 mg/ml Gentamicin, and 1% Pen-Strep. These cells are treated with supernatants containing polypeptide of the present invention or polypeptide of the present invention induced polypeptides as produced by the protocol described in Example 30.
- [01153] On the day of treatment with the supernatant, the cells should be washed and resuspended in fresh RPMI + 10% serum to a density of 500,000 cells per ml. The exact number of cells required will depend on the number of supernatants being screened. For one 96 well plate, approximately 10 million cells (for 10 plates, 100 million cells) are required.
- [01154] Transfer the cells to a triangular reservoir boat, in order to dispense the cells into a 96 well dish, using a 12 channel pipette. Using a 12 channel pipette, transfer 200 ul of cells into each well (therefore adding 100, 000 cells per well).
- [01155] After all the plates have been seeded, 50 ul of the supernatants are transferred directly from the 96 well plate containing the supernatants into each well using a 12

channel pipette. In addition, a dose of exogenous interferon gamma (0.1, 1.0, 10 ng) is added to wells H9, H10, and H11 to serve as additional positive controls for the assay.

[01156] The 96 well dishes containing Jurkat cells treated with supernatants are placed in an incubator for 48 hrs (note: this time is variable between 48-72 hrs). 35 ul samples from each well are then transferred to an opaque 96 well plate using a 12 channel pipette. The opaque plates should be covered (using sellophene covers) and stored at -20 degree C until SEAP assays are performed according to Example 36. The plates containing the remaining treated cells are placed at 4 degree C and serve as a source of material for repeating the assay on a specific well if desired.

[01157] As a positive control, 100 Unit/ml interferon gamma can be used which is known to activate Jurkat T cells. Over 30 fold induction is typically observed in the positive control wells.

[01158] The above protocol may be used in the generation of both transient, as well as stable, transfected cells, which would be apparent to those of skill in the art.

### ***Example 33: High-Throughput Screening Assay Identifying Myeloid Activity***

[01159] The following protocol is used to assess myeloid activity of polypeptide of the present invention by determining whether polypeptide of the present invention proliferates and/or differentiates myeloid cells. Myeloid cell activity is assessed using the GAS/SEAP/Neo construct produced in Example 31. Thus, factors that increase SEAP activity indicate the ability to activate the Jaks-STATS signal transduction pathway. The myeloid cell used in this assay is U937, a pre-monocyte cell line, although TF-1, HL60, or KG1 can be used.

[01160] To transiently transfect U937 cells with the GAS/SEAP/Neo construct produced in Example 31, a DEAE-Dextran method (Kharbanda et. al., 1994, Cell Growth & Differentiation, 5:259-265) is used. First, harvest  $2 \times 10^7$  U937 cells and wash with PBS. The U937 cells are usually grown in RPMI 1640 medium containing 10% heat-inactivated fetal bovine serum (FBS) supplemented with 100 units/ml penicillin and 100 mg/ml streptomycin.

[01161] Next, suspend the cells in 1 ml of 20 mM Tris-HCl (pH 7.4) buffer containing 0.5 mg/ml DEAE-Dextran, 8 ug GAS-SEAP2 plasmid DNA, 140 mM NaCl, 5 mM KCl,



375  $\mu\text{M}$   $\text{Na}_2\text{HPO}_4 \cdot 7\text{H}_2\text{O}$ , 1 mM  $\text{MgCl}_2$ , and 675  $\mu\text{M}$   $\text{CaCl}_2$ . Incubate at 37 degrees C for 45 min.

- [01162] Wash the cells with RPMI 1640 medium containing 10% FBS and then resuspend in 10 ml complete medium and incubate at 37 degree C for 36 hr.
- [01163] The GAS-SEAP/U937 stable cells are obtained by growing the cells in 400  $\mu\text{g}/\text{ml}$  G418. The G418-free medium is used for routine growth but every one to two months, the cells should be re-grown in 400  $\mu\text{g}/\text{ml}$  G418 for couple of passages.
- [01164] These cells are tested by harvesting  $1 \times 10^8$  cells (this is enough for ten 96-well plates assay) and wash with PBS. Suspend the cells in 200 ml above described growth medium, with a final density of  $5 \times 10^5$  cells/ml. Plate 200  $\mu\text{l}$  cells per well in the 96-well plate (or  $1 \times 10^5$  cells/well).
- [01165] Add 50  $\mu\text{l}$  of the supernatant prepared by the protocol described in Example 30. Incubate at 37 degree C for 48 to 72 hr. As a positive control, 100 Unit/ml interferon gamma can be used which is known to activate U937 cells. Over 30 fold induction is typically observed in the positive control wells. SEAP assay the supernatant according to the protocol described in Example 36.

***Example 34: High-Throughput Screening Assay Identifying Neuronal Activity.***

- [01166] When cells undergo differentiation and proliferation, a group of genes are activated through many different signal transduction pathways. One of these genes, EGR1 (early growth response gene 1), is induced in various tissues and cell types upon activation. The promoter of EGR1 is responsible for such induction. Using the EGR1 promoter linked to reporter molecules, activation of cells can be assessed by polypeptide of the present invention.
- [01167] Particularly, the following protocol is used to assess neuronal activity in PC12 cell lines. PC12 cells (rat phenochromocytoma cells) are known to proliferate and/or differentiate by activation with a number of mitogens, such as TPA (tetradecanoyl phorbol acetate), NGF (nerve growth factor), and EGF (epidermal growth factor). The EGR1 gene expression is activated during this treatment. Thus, by stably transfecting

PC12 cells with a construct containing an EGR promoter linked to SEAP reporter, activation of PC12 cells by polypeptide of the present invention can be assessed.

- [01168] The EGR/SEAP reporter construct can be assembled by the following protocol. The EGR-1 promoter sequence (-633 to +1)(Sakamoto K et al., Oncogene 6:867-871 (1991)) can be PCR amplified from human genomic DNA using the following primers:

5' GCGCTCGAGGGATGACAGCGATAGAACCCCGG -3' (SEQ ID NO: 6)

5' GCGAAGCTTCGCGACTCCCCGGATCCGCCTC-3' (SEQ ID NO: 7)

- [01169] Using the GAS:SEAP/Neo vector produced in Example 31, EGR1 amplified product can then be inserted into this vector. Linearize the GAS:SEAP/Neo vector using restriction enzymes XhoI/HindIII, removing the GAS/SV40 stuffer. Restrict the EGR1 amplified product with these same enzymes. Ligate the vector and the EGR1 promoter.

- [01170] To prepare 96 well-plates for cell culture, two mls of a coating solution (1:30 dilution of collagen type I (Upstate Biotech Inc. Cat#08-115) in 30% ethanol (filter sterilized)) is added per one 10 cm plate or 50 ml per well of the 96-well plate, and allowed to air dry for 2 hr.

- [01171] PC12 cells are routinely grown in RPMI-1640 medium (Bio Whittaker) containing 10% horse serum (JRH BIOSCIENCES, Cat. # 12449-78P), 5% heat-inactivated fetal bovine serum (FBS) supplemented with 100 units/ml penicillin and 100 ug/ml streptomycin on a precoated 10 cm tissue culture dish. One to four split is done every three to four days. Cells are removed from the plates by scraping and resuspended with pipetting up and down for more than 15 times.

- [01172] Transfect the EGR/SEAP/Neo construct into PC12 using the Lipofectamine protocol described in Example 30. EGR-SEAP/PC12 stable cells are obtained by growing the cells in 300 ug/ml G418. The G418-free medium is used for routine growth but every one to two months, the cells should be re-grown in 300 ug/ml G418 for couple of passages.

- [01173] To assay for neuronal activity, a 10 cm plate with cells around 70 to 80% confluent is screened by removing the old medium. Wash the cells once with PBS (Phosphate buffered saline). Then starve the cells in low serum medium (RPMI-1640 containing 1% horse serum and 0.5% FBS with antibiotics) overnight.

- [01174] The next morning, remove the medium and wash the cells with PBS. Scrape off the cells from the plate, suspend the cells well in 2 ml low serum medium. Count the cell number and add more low serum medium to reach final cell density as  $5 \times 10^5$  cells/ml.
- [01175] Add 200  $\mu$ l of the cell suspension to each well of 96-well plate (equivalent to  $1 \times 10^5$  cells/well). Add 50  $\mu$ l supernatant produced by Example 30, 37 degree C for 48 to 72 hr. As a positive control, a growth factor known to activate PC12 cells through EGR can be used, such as 50 ng/ $\mu$ l of Neuronal Growth Factor (NGF). Over fifty-fold induction of SEAP is typically seen in the positive control wells. SEAP assay the supernatant according to Example 36.

***Example 35: High-Throughput Screening Assay for T-cell Activity***

- [01176] NF-KB (Nuclear Factor KB) is a transcription factor activated by a wide variety of agents including the inflammatory cytokines IL-1 and TNF, CD30 and CD40, lymphotoxin-alpha and lymphotoxin-beta, by exposure to LPS or thrombin, and by expression of certain viral gene products. As a transcription factor, NF-KB regulates the expression of genes involved in immune cell activation, control of apoptosis (NF-KB appears to shield cells from apoptosis), B and T-cell development, anti-viral and antimicrobial responses, and multiple stress responses.
- [01177] In non-stimulated conditions, NF-KB is retained in the cytoplasm with I-KB (Inhibitor KB). However, upon stimulation, I-KB is phosphorylated and degraded, causing NF-KB to shuttle to the nucleus, thereby activating transcription of target genes. Target genes activated by NF-KB include IL-2, IL-6, GM-CSF, ICAM-1 and class I MHC.
- [01178] Due to its central role and ability to respond to a range of stimuli, reporter constructs utilizing the NF-KB promoter element are used to screen the supernatants produced in Example 30. Activators or inhibitors of NF-KB would be useful in treating, preventing, and/or diagnosing diseases. For example, inhibitors of NF-KB could be used to treat those diseases related to the acute or chronic activation of NF-KB, such as rheumatoid arthritis.

- [01179] To construct a vector containing the NF-KB promoter element, a PCR based strategy is employed. The upstream primer contains four tandem copies of the NF-KB binding site (GGGGACTTTCCC) (SEQ ID NO: 8), 18 bp of sequence complementary to the 5' end of the SV40 early promoter sequence, and is flanked with an XhoI site:  
5':GCGGCCTCGAGGGGACTTTCCCGGGGACTTTCCCGGGGACTTTCCGGGACT  
TTCCATCCTGCCATCTCAATTAG:3' (SEQ ID NO: 9)
- [01180] The downstream primer is complementary to the 3' end of the SV40 promoter and is flanked with a Hind III site:  
5':GCGGCAAGCTTTTGGCAAAGCCTAGGC:3' (SEQ ID NO: 4)
- [01181] PCR amplification is performed using the SV40 promoter template present in the pB-gal:promoter plasmid obtained from Clontech. The resulting PCR fragment is digested with XhoI and Hind III and subcloned into BLSK2-. (Stratagene) Sequencing with the T7 and T3 primers confirms the insert contains the following sequence:  
5':CTCGAGGGGACTTTCCCGGGGACTTTCCCGGGGACTTTCCGGGACTTTCCAT  
CTGCCATCTCAATTAGTCAGCAACCATAGTCCCGCCCCTAACTCCGCCCATCC  
CGCCCCTAACTCCGCCCAGTTCCGCCCATTTCTCGCCCCATGGCTGACTAATT  
TTTTTTATTATGCAGAGGCCGAGGCCGCTCGGCCTCTGAGCTATTCCAGAA  
GTAGTGAGGAGGCTTTTTTGGAGGCCTAGGCTTTTGCAAAAAGCTT:3' (SEQ  
ID NO: 10)
- [01182] Next, replace the SV40 minimal promoter element present in the pSEAP2-promoter plasmid (Clontech) with this NF-KB/SV40 fragment using XhoI and HindIII. However, this vector does not contain a neomycin resistance gene, and therefore, is not preferred for mammalian expression systems.
- [01183] In order to generate stable mammalian cell lines, the NF-KB/SV40/SEAP cassette is removed from the above NF-KB/SEAP vector using restriction enzymes SalI and NotI, and inserted into a vector containing neomycin resistance. Particularly, the NF-KB/SV40/SEAP cassette was inserted into pGFP-1 (Clontech), replacing the GFP gene, after restricting pGFP-1 with SalI and NotI.
- [01184] Once NF-KB/SV40/SEAP/Neo vector is created, stable Jurkat T-cells are created and maintained according to the protocol described in Example 32. Similarly, the method for assaying supernatants with these stable Jurkat T-cells is also described in

Example 32. As a positive control, exogenous TNF alpha (0.1, 1, 10 ng) is added to wells H9, H10, and H11, with a 5-10 fold activation typically observed.

***Example 36: Assay for SEAP Activity***

[01185] As a reporter molecule for the assays described in Examples 32-35, SEAP activity is assayed using the Tropix Phospho-light Kit (Cat. BP-400) according to the following general procedure. The Tropix Phospho-light Kit supplies the Dilution, Assay, and Reaction Buffers used below.

[01186] Prime a dispenser with the 2.5x Dilution Buffer and dispense 15 ul of 2.5x dilution buffer into Optiplates containing 35 ul of a supernatant. Seal the plates with a plastic sealer and incubate at 65 degree C for 30 min. Separate the Optiplates to avoid uneven heating.

[01187] Cool the samples to room temperature for 15 minutes. Empty the dispenser and prime with the Assay Buffer. Add 50 ml Assay Buffer and incubate at room temperature 5 min. Empty the dispenser and prime with the Reaction Buffer (see the Table below). Add 50 ul Reaction Buffer and incubate at room temperature for 20 minutes. Since the intensity of the chemiluminescent signal is time dependent, and it takes about 10 minutes to read 5 plates on a luminometer, thus one should treat 5 plates at each time and start the second set 10 minutes later.

[01188] Read the relative light unit in the luminometer. Set H12 as blank, and print the results. An increase in chemiluminescence indicates reporter activity.

**Reaction Buffer Formulation:**

# of plates	Rxn buffer diluent (ml)	CSPD (ml)
10	60	3
11	65	3.25
12	70	3.5
13	75	3.75
14	80	4
15	85	4.25
16	90	4.5
17	95	4.75

18	100	5
19	105	5.25
20	110	5.5
21	115	5.75
22	120	6
23	125	6.25
24	130	6.5
25	135	6.75
26	140	7
27	145	7.25
28	150	7.5
29	155	7.75
30	160	8
31	165	8.25
32	170	8.5
33	175	8.75
34	180	9
35	185	9.25
36	190	9.5
37	195	9.75
38	200	10
39	205	10.25
40	210	10.5
41	215	10.75
42	220	11
43	225	11.25
44	230	11.5
45	235	11.75
46	240	12
47	245	12.25
48	250	12.5
49	255	12.75
50	260	13

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***Example 37: High-Throughput Screening Assay Identifying Changes in  
Small Molecule Concentration and Membrane Permeability***

- [01189] Binding of a ligand to a receptor is known to alter intracellular levels of small molecules, such as calcium, potassium, sodium, and pH, as well as alter membrane potential. These alterations can be measured in an assay to identify supernatants which bind to receptors of a particular cell. Although the following protocol describes an assay for calcium, this protocol can easily be modified to detect changes in potassium, sodium, pH, membrane potential, or any other small molecule which is detectable by a fluorescent probe.
- [01190] The following assay uses Fluorometric Imaging Plate Reader ("FLIPR") to measure changes in fluorescent molecules (Molecular Probes) that bind small molecules. Clearly, any fluorescent molecule detecting a small molecule can be used instead of the calcium fluorescent molecule, fluo-4 (Molecular Probes, Inc.; catalog no. F-14202), used here.
- [01191] For adherent cells, seed the cells at 10,000 -20,000 cells/well in a Co-star black 96-well plate with clear bottom. The plate is incubated in a CO<sub>2</sub> incubator for 20 hours. The adherent cells are washed two times in Biotek washer with 200 ul of HBSS (Hank's Balanced Salt Solution) leaving 100 ul of buffer after the final wash.
- [01192] A stock solution of 1 mg/ml fluo-4 is made in 10% pluronic acid DMSO. To load the cells with fluo-4, 50 ul of 12 ug/ml fluo-4 is added to each well. The plate is incubated at 37 degrees C in a CO<sub>2</sub> incubator for 60 min. The plate is washed four times in the Biotek washer with HBSS leaving 100 ul of buffer.
- [01193] For non-adherent cells, the cells are spun down from culture media. Cells are re-suspended to  $2.5 \times 10^6$  cells/ml with HBSS in a 50-ml conical tube. 4 ul of 1 mg/ml fluo-4 solution in 10% pluronic acid DMSO is added to each ml of cell suspension. The tube is then placed in a 37 degrees C water bath for 30-60 min. The cells are washed twice with HBSS, resuspended to  $1 \times 10^6$  cells/ml, and dispensed into a microplate, 100 ul/well. The plate is centrifuged at 1000 rpm for 5 min. The plate is then washed once in Denley Cell Wash with 200 ul, followed by an aspiration step to 100 ul final volume.
- [01194] For a non-cell based assay, each well contains a fluorescent molecule, such as fluo-4. The supernatant is added to the well, and a change in fluorescence is detected.
- [01195] To measure the fluorescence of intracellular calcium, the FLIPR is set for the following parameters: (1) System gain is 300-800 mW; (2) Exposure time is 0.4 second; (3) Camera F/stop is F/2; (4) Excitation is 488 nm; (5) Emission is 530 nm; and

(6) Sample addition is 50 ul. Increased emission at 530 nm indicates an extracellular signaling event caused by the a molecule, either polypeptide of the present invention or a molecule induced by polypeptide of the present invention, which has resulted in an increase in the intracellular  $\text{Ca}^{++}$  concentration.

***Example 38: High-Throughput Screening Assay Identifying Tyrosine Kinase Activity***

[01196] The Protein Tyrosine Kinases (PTK) represent a diverse group of transmembrane and cytoplasmic kinases. Within the Receptor Protein Tyrosine Kinase (RPTK) group are receptors for a range of mitogenic and metabolic growth factors including the PDGF, FGF, EGF, NGF, HGF and Insulin receptor subfamilies. In addition there are a large family of RPTKs for which the corresponding ligand is unknown. Ligands for RPTKs include mainly secreted small proteins, but also membrane-bound and extracellular matrix proteins.

[01197] Activation of RPTK by ligands involves ligand-mediated receptor dimerization, resulting in transphosphorylation of the receptor subunits and activation of the cytoplasmic tyrosine kinases. The cytoplasmic tyrosine kinases include receptor associated tyrosine kinases of the src-family (e.g., src, yes, lck, lyn, fyn) and non-receptor linked and cytosolic protein tyrosine kinases, such as the Jak family, members of which mediate signal transduction triggered by the cytokine superfamily of receptors (e.g., the Interleukins, Interferons, GM-CSF, and Leptin).

[01198] Because of the wide range of known factors capable of stimulating tyrosine kinase activity, identifying whether polypeptide of the present invention or a molecule induced by polypeptide of the present invention is capable of activating tyrosine kinase signal transduction pathways is of interest. Therefore, the following protocol is designed to identify such molecules capable of activating the tyrosine kinase signal transduction pathways.

[01199] Seed target cells (e.g., primary keratinocytes) at a density of approximately 25,000 cells per well in a 96 well Loprodyne Silent Screen Plates purchased from Nalge Nunc (Naperville, IL). The plates are sterilized with two 30 minute rinses with 100% ethanol, rinsed with water and dried overnight. Some plates are coated for 2 hr with 100



ml of cell culture grade type I collagen (50 mg/ml), gelatin (2%) or polylysine (50 mg/ml), all of which can be purchased from Sigma Chemicals (St. Louis, MO) or 10% Matrigel purchased from Becton Dickinson (Bedford, MA), or calf serum, rinsed with PBS and stored at 4 degree C. Cell growth on these plates is assayed by seeding 5,000 cells/well in growth medium and indirect quantitation of cell number through use of alamarBlue as described by the manufacturer Alamar Biosciences, Inc. (Sacramento, CA) after 48 hr. Falcon plate covers #3071 from Becton Dickinson (Bedford, MA) are used to cover the Loprodyne Silent Screen Plates. Falcon Microtest III cell culture plates can also be used in some proliferation experiments.

[01200] To prepare extracts, A431 cells are seeded onto the nylon membranes of Loprodyne plates (20,000/200ml/well) and cultured overnight in complete medium. Cells are quiesced by incubation in serum-free basal medium for 24 hr. After 5-20 minutes treatment with EGF (60ng/ml) or 50 ul of the supernatant produced in Example 30, the medium was removed and 100 ml of extraction buffer ((20 mM HEPES pH 7.5, 0.15 M NaCl, 1% Triton X-100, 0.1% SDS, 2 mM Na3VO4, 2 mM Na4P2O7 and a cocktail of protease inhibitors (# 1836170) obtained from Boehringer Mannheim (Indianapolis, IN)) is added to each well and the plate is shaken on a rotating shaker for 5 minutes at 4°C. The plate is then placed in a vacuum transfer manifold and the extract filtered through the 0.45 mm membrane bottoms of each well using house vacuum. Extracts are collected in a 96-well catch/assay plate in the bottom of the vacuum manifold and immediately placed on ice. To obtain extracts clarified by centrifugation, the content of each well, after detergent solubilization for 5 minutes, is removed and centrifuged for 15 minutes at 4 degree C at 16,000 x g.

[01201] Test the filtered extracts for levels of tyrosine kinase activity. Although many methods of detecting tyrosine kinase activity are known, one method is described here.

[01202] Generally, the tyrosine kinase activity of a supernatant is evaluated by determining its ability to phosphorylate a tyrosine residue on a specific substrate (a biotinylated peptide). Biotinylated peptides that can be used for this purpose include PSK1 (corresponding to amino acids 6-20 of the cell division kinase cdc2-p34) and PSK2 (corresponding to amino acids 1-17 of gastrin). Both peptides are substrates for a range of tyrosine kinases and are available from Boehringer Mannheim.

- [01203] The tyrosine kinase reaction is set up by adding the following components in order. First, add 10ul of 5uM Biotinylated Peptide, then 10ul ATP/Mg<sub>2</sub><sup>+</sup> (5mM ATP/50mM MgCl<sub>2</sub>), then 10ul of 5x Assay Buffer (40mM imidazole hydrochloride, pH7.3, 40 mM beta-glycerophosphate, 1mM EGTA, 100mM MgCl<sub>2</sub>, 5 mM MnCl<sub>2</sub>, 0.5 mg/ml BSA), then 5ul of Sodium Vanadate (1mM), and then 5ul of water. Mix the components gently and preincubate the reaction mix at 30 degree C for 2 min. Initial the reaction by adding 10ul of the control enzyme or the filtered supernatant.
- [01204] The tyrosine kinase assay reaction is then terminated by adding 10 ul of 120mM EDTA and place the reactions on ice.
- [01205] Tyrosine kinase activity is determined by transferring 50 ul aliquot of reaction mixture to a microtiter plate (MTP) module and incubating at 37 degree C for 20 min. This allows the streptavidin coated 96 well plate to associate with the biotinylated peptide. Wash the MTP module with 300ul/well of PBS four times. Next add 75 ul of anti-phosphotyrosine antibody conjugated to horse radish peroxidase (anti-P-Tyr-POD(0.5u/ml)) to each well and incubate at 37 degree C for one hour. Wash the well as above.
- [01206] Next add 100ul of peroxidase substrate solution (Boehringer Mannheim) and incubate at room temperature for at least 5 mins (up to 30 min). Measure the absorbance of the sample at 405 nm by using ELISA reader. The level of bound peroxidase activity is quantitated using an ELISA reader and reflects the level of tyrosine kinase activity.

### ***Example 39: High-Throughput Screening Assay Identifying Phosphorylation Activity***

- [01207] As a potential alternative and/or complement to the assay of protein tyrosine kinase activity described in Example 38, an assay which detects activation (phosphorylation) of major intracellular signal transduction intermediates can also be used. For example, as described below one particular assay can detect tyrosine phosphorylation of the Erk-1 and Erk-2 kinases. However, phosphorylation of other molecules, such as Raf, JNK, p38 MAP, Map kinase kinase (MEK), MEK kinase, Src, Muscle specific kinase (MuSK), IRAK, Tec, and Janus, as well as any other

phosphoserine, phosphotyrosine, or phosphothreonine molecule, can be detected by substituting these molecules for Erk-1 or Erk-2 in the following assay.

[01208] Specifically, assay plates are made by coating the wells of a 96-well ELISA plate with 0.1ml of protein G (1ug/ml) for 2 hr at room temp, (RT). The plates are then rinsed with PBS and blocked with 3% BSA/PBS for 1 hr at RT. The protein G plates are then treated with 2 commercial monoclonal antibodies (100ng/well) against Erk-1 and Erk-2 (1 hr at RT) (Santa Cruz Biotechnology). (To detect other molecules, this step can easily be modified by substituting a monoclonal antibody detecting any of the above described molecules.) After 3-5 rinses with PBS, the plates are stored at 4 degree C until use.

[01209] A431 cells are seeded at 20,000/well in a 96-well Loprodyn filterplate and cultured overnight in growth medium. The cells are then starved for 48 hr in basal medium (DMEM) and then treated with EGF (6ng/well) or 50 ul of the supernatants obtained in Example 30 for 5-20 minutes. The cells are then solubilized and extracts filtered directly into the assay plate.

[01210] After incubation with the extract for 1 hr at RT, the wells are again rinsed. As a positive control, a commercial preparation of MAP kinase (10ng/well) is used in place of A431 extract. Plates are then treated with a commercial polyclonal (rabbit) antibody (1ug/ml) which specifically recognizes the phosphorylated epitope of the Erk-1 and Erk-2 kinases (1 hr at RT). This antibody is biotinylated by standard procedures. The bound polyclonal antibody is then quantitated by successive incubations with Europium-streptavidin and Europium fluorescence enhancing reagent in the Wallac DELFIA instrument (time-resolved fluorescence). An increased fluorescent signal over background indicates a phosphorylation by polypeptide of the present invention or a molecule induced by polypeptide of the present invention.

#### ***Example 40: Assay for the Stimulation of Bone Marrow CD34+ Cell Proliferation***

[01211] This assay is based on the ability of human CD34+ to proliferate in the presence of hematopoietic growth factors and evaluates the ability of isolated polypeptides expressed in mammalian cells to stimulate proliferation of CD34+ cells.

[01212] It has been previously shown that most mature precursors will respond to only a single signal. More immature precursors require at least two signals to respond. Therefore, to test the effect of polypeptides on hematopoietic activity of a wide range of progenitor cells, the assay contains a given polypeptide in the presence or absence of other hematopoietic growth factors. Isolated cells are cultured for 5 days in the presence of Stem Cell Factor (SCF) in combination with tested sample. SCF alone has a very limited effect on the proliferation of bone marrow (BM) cells, acting in such conditions only as a "survival" factor. However, combined with any factor exhibiting stimulatory effect on these cells (e.g., IL-3), SCF will cause a synergistic effect. Therefore, if the tested polypeptide has a stimulatory effect on hematopoietic progenitors, such activity can be easily detected. Since normal BM cells have a low level of cycling cells, it is likely that any inhibitory effect of a given polypeptide, or agonists or antagonists thereof, might not be detected. Accordingly, assays for an inhibitory effect on progenitors is preferably tested in cells that are first subjected to *in vitro* stimulation with SCF+IL+3, and then contacted with the compound that is being evaluated for inhibition of such induced proliferation.

[01213] Briefly, CD34+ cells are isolated using methods known in the art. The cells are thawed and resuspended in medium (QBSF 60 serum-free medium with 1% L-glutamine (500ml) Quality Biological, Inc., Gaithersburg, MD Cat# 160-204-101). After several gentle centrifugation steps at 200 x g, cells are allowed to rest for one hour. The cell count is adjusted to  $2.5 \times 10^5$  cells/ml. During this time, 100  $\mu$ l of sterile water is added to the peripheral wells of a 96-well plate. The cytokines that can be tested with a given polypeptide in this assay is rhSCF (R&D Systems, Minneapolis, MN, Cat# 255-SC) at 50 ng/ml alone and in combination with rhSCF and rhIL-3 (R&D Systems, Minneapolis, MN, Cat# 203-ML) at 30 ng/ml. After one hour, 10  $\mu$ l of prepared cytokines, 50  $\mu$ l of the supernatants prepared in Example 30 (supernatants at 1:2 dilution = 50  $\mu$ l) and 20  $\mu$ l of diluted cells are added to the media which is already present in the wells to allow for a final total volume of 100  $\mu$ l. The plates are then placed in a 37°C/5% CO<sub>2</sub> incubator for five days.

[01214] Eighteen hours before the assay is harvested, 0.5  $\mu$ Ci/well of [3H] Thymidine is added in a 10  $\mu$ l volume to each well to determine the proliferation rate. The experiment is terminated by harvesting the cells from each 96-well plate to a filtermat

using the Tomtec Harvester 96. After harvesting, the filtermats are dried, trimmed and placed into OmniFilter assemblies consisting of one OmniFilter plate and one OmniFilter Tray. 60  $\mu$ l Microscint is added to each well and the plate sealed with TopSeal-A press-on sealing film. A bar code 15 sticker is affixed to the first plate for counting. The sealed plates are then loaded and the level of radioactivity determined via the Packard Top Count and the printed data collected for analysis. The level of radioactivity reflects the amount of cell proliferation.

[01215] The studies described in this example test the activity of a given polypeptide to stimulate bone marrow CD34+ cell proliferation. One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof. As a nonlimiting example, potential antagonists tested in this assay would be expected to inhibit cell proliferation in the presence of cytokines and/or to increase the inhibition of cell proliferation in the presence of cytokines and a given polypeptide. In contrast, potential agonists tested in this assay would be expected to enhance cell proliferation and/or to decrease the inhibition of cell proliferation in the presence of cytokines and a given polypeptide.

[01216] The ability of a gene to stimulate the proliferation of bone marrow CD34+ cells indicates that polynucleotides and polypeptides corresponding to the gene are useful for the diagnosis and treatment of disorders affecting the immune system and hematopoiesis. Representative uses are described in the "Immune Activity" and "Infectious Disease" sections above, and elsewhere herein.

#### *Example 41: Assay for Extracellular Matrix Enhanced Cell Response (EMECR)*

[01217] The objective of the Extracellular Matrix Enhanced Cell Response (EMECR) assay is to identify gene products (e.g., isolated polypeptides) that act on the hematopoietic stem cells in the context of the extracellular matrix (ECM) induced signal.

[01218] Cells respond to the regulatory factors in the context of signal(s) received from the surrounding microenvironment. For example, fibroblasts, and endothelial and epithelial stem cells fail to replicate in the absence of signals from the ECM.

Hematopoietic stem cells can undergo self-renewal in the bone marrow, but not in *in vitro* suspension culture. The ability of stem cells to undergo self-renewal *in vitro* is dependent upon their interaction with the stromal cells and the ECM protein fibronectin (fn). Adhesion of cells to fn is mediated by the  $\alpha_5\beta_1$  and  $\alpha_4\beta_1$  integrin receptors, which are expressed by human and mouse hematopoietic stem cells. The factor(s) which integrate with the ECM environment and are responsible for stimulating stem cell self-renewal have not yet been identified. Discovery of such factors should be of great interest in gene therapy and bone marrow transplant applications

[01219] Briefly, polystyrene, non tissue culture treated, 96-well plates are coated with fn fragment at a coating concentration of  $0.2 \mu\text{g}/\text{cm}^2$ . Mouse bone marrow cells are plated (1,000 cells/well) in 0.2 ml of serum-free medium. Cells cultured in the presence of IL-3 (5 ng/ml) + SCF (50 ng/ml) would serve as the positive control, conditions under which little self-renewal but pronounced differentiation of the stem cells is to be expected. Gene products of the invention (e.g., including, but not limited to, polynucleotides and polypeptides of the present invention, and supernatants produced in Example 30), are tested with appropriate negative controls in the presence and absence of SCF(5.0 ng/ml), where test factor supernatants represent 10% of the total assay volume. The plated cells are then allowed to grow by incubating in a low oxygen environment (5% CO<sub>2</sub>, 7% O<sub>2</sub>, and 88% N<sub>2</sub>) tissue culture incubator for 7 days. The number of proliferating cells within the wells is then quantitated by measuring thymidine incorporation into cellular DNA. Verification of the positive hits in the assay will require phenotypic characterization of the cells, which can be accomplished by scaling up of the culture system and using appropriate antibody reagents against cell surface antigens and FACSscan.

[01220] One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof.

[01221] If a particular polypeptide of the present invention is found to be a stimulator of hematopoietic progenitors, polynucleotides and polypeptides corresponding to the gene encoding said polypeptide may be useful for the diagnosis and treatment of disorders affecting the immune system and hematopoiesis. Representative uses are described in the "Immune Activity" and "Infectious Disease" sections above, and

elsewhere herein. The gene product may also be useful in the expansion of stem cells and committed progenitors of various blood lineages, and in the differentiation and/or proliferation of various cell types.

[01222] Additionally, the polynucleotides and/or polypeptides of the gene of interest and/or agonists and/or antagonists thereof, may also be employed to inhibit the proliferation and differentiation of hematopoietic cells and therefore may be employed to protect bone marrow stem cells from chemotherapeutic agents during chemotherapy. This antiproliferative effect may allow administration of higher doses of chemotherapeutic agents and, therefore, more effective chemotherapeutic treatment.

[01223] Moreover, polynucleotides and polypeptides corresponding to the gene of interest may also be useful for the treatment and diagnosis of hematopoietic related disorders such as, for example, anemia, pancytopenia, leukopenia, thrombocytopenia or leukemia since stromal cells are important in the production of cells of hematopoietic lineages. The uses include bone marrow cell ex-vivo culture, bone marrow transplantation, bone marrow reconstitution, radiotherapy or chemotherapy of neoplasia.

#### ***Example 42: Human Dermal Fibroblast and Aortic Smooth Muscle Cell Proliferation***

[01224] The polypeptide of interest is added to cultures of normal human dermal fibroblasts (NHDF) and human aortic smooth muscle cells (AoSMC) and two co-assays are performed with each sample. The first assay examines the effect of the polypeptide of interest on the proliferation of normal human dermal fibroblasts (NHDF) or aortic smooth muscle cells (AoSMC). Aberrant growth of fibroblasts or smooth muscle cells is a part of several pathological processes, including fibrosis, and restenosis. The second assay examines IL6 production by both NHDF and SMC. IL6 production is an indication of functional activation. Activated cells will have increased production of a number of cytokines and other factors, which can result in a proinflammatory or immunomodulatory outcome. Assays are run with and without co-TNF $\alpha$  stimulation, in order to check for costimulatory or inhibitory activity.

[01225] Briefly, on day 1, 96-well black plates are set up with 1000 cells/well (NHDF) or 2000 cells/well (AoSMC) in 100  $\mu$ l culture media. NHDF culture media

contains: Clonetics FB basal media, 1mg/ml hFGF, 5mg/ml insulin, 50mg/ml gentamycin, 2%FBS, while AoSMC culture media contains Clonetics SM basal media, 0.5  $\mu$ g/ml hEGF, 5mg/ml insulin, 1 $\mu$ g/ml hFGF, 50mg/ml gentamycin, 50  $\mu$ g/ml Amphotericin B, 5%FBS. After incubation at 37°C for at least 4-5 hours culture media is aspirated and replaced with growth arrest media. Growth arrest media for NHDF contains fibroblast basal media, 50mg/ml gentamycin, 2% FBS, while growth arrest media for AoSMC contains SM basal media, 50mg/ml gentamycin, 50 $\mu$ g/ml Amphotericin B, 0.4% FBS. Incubate at 37 °C until day 2.

[01226] On day 2, serial dilutions and templates of the polypeptide of interest are designed such that they always include media controls and known-protein controls. For both stimulation and inhibition experiments, proteins are diluted in growth arrest media. For inhibition experiments, TNFa is added to a final concentration of 2ng/ml (NHDF) or 5ng/ml (AoSMC). Add 1/3 vol media containing controls or polypeptides of the present invention and incubate at 37 degrees C/5% CO<sub>2</sub> until day 5.

[01227] Transfer 60 $\mu$ l from each well to another labeled 96-well plate, cover with a plate-sealer, and store at 4 degrees C until Day 6 (for IL6 ELISA). To the remaining 100  $\mu$ l in the cell culture plate, aseptically add Alamar Blue in an amount equal to 10% of the culture volume (10 $\mu$ l). Return plates to incubator for 3 to 4 hours. Then measure fluorescence with excitation at 530nm and emission at 590nm using the CytoFluor. This yields the growth stimulation/inhibition data.

[01228] On day 5, the IL6 ELISA is performed by coating a 96 well plate with 50-100  $\mu$ l/well of Anti-Human IL6 Monoclonal antibody diluted in PBS, pH 7.4, incubate ON at room temperature.

[01229] On day 6, empty the plates into the sink and blot on paper towels. Prepare Assay Buffer containing PBS with 4% BSA. Block the plates with 200  $\mu$ l/well of Pierce Super Block blocking buffer in PBS for 1-2 hr and then wash plates with wash buffer (PBS, 0.05% Tween-20). Blot plates on paper towels. Then add 50  $\mu$ l/well of diluted Anti-Human IL-6 Monoclonal, Biotin-labeled antibody at 0.50 mg/ml. Make dilutions of IL-6 stock in media (30, 10, 3, 1, 0.3, 0 ng/ml). Add duplicate samples to top row of plate. Cover the plates and incubate for 2 hours at RT on shaker.

[01230] Plates are washed with wash buffer and blotted on paper towels. Dilute EU-labeled Streptavidin 1:1000 in Assay buffer, and add 100  $\mu$ l/well. Cover the plate and



incubate 1 h at RT. Plates are again washed with wash buffer and blotted on paper towels.

[01231] Add 100  $\mu$ l/well of Enhancement Solution. Shake for 5 minutes. Read the plate on the Wallac DELFIA Fluorometer. Readings from triplicate samples in each assay were tabulated and averaged.

[01232] A positive result in this assay suggests AoSMC cell proliferation and that the polypeptide of the present invention may be involved in dermal fibroblast proliferation and/or smooth muscle cell proliferation. A positive result also suggests many potential uses of polypeptides, polynucleotides, agonists and/or antagonists of the polynucleotide/polypeptide of the present invention which gives a positive result. For example, inflammation and immune responses, wound healing, and angiogenesis, as detailed throughout this specification. Particularly, polypeptides of the present invention and polynucleotides of the present invention may be used in wound healing and dermal regeneration, as well as the promotion of vasculogenesis, both of the blood vessels and lymphatics. The growth of vessels can be used in the treatment of, for example, cardiovascular diseases. Additionally, antagonists of polypeptides and polynucleotides of the invention may be useful in treating diseases, disorders, and/or conditions which involve angiogenesis by acting as an anti-vascular agent (e.g., anti-angiogenesis). These diseases, disorders, and/or conditions are known in the art and/or are described herein, such as, for example, malignancies, solid tumors, benign tumors, for example hemangiomas, acoustic neuromas, neurofibromas, trachomas, and pyogenic granulomas; arteriosclerotic plaques; ocular angiogenic diseases, for example, diabetic retinopathy, retinopathy of prematurity, macular degeneration, corneal graft rejection, neovascular glaucoma, retrolental fibroplasia, rubeosis, retinoblastoma, uveitis and Pterygia (abnormal blood vessel growth) of the eye; rheumatoid arthritis; psoriasis; delayed wound healing; endometriosis; vasculogenesis; granulations; hypertrophic scars (keloids); nonunion fractures; scleroderma; trachoma; vascular adhesions; myocardial angiogenesis; coronary collaterals; cerebral collaterals; arteriovenous malformations; ischemic limb angiogenesis; Osler-Webber Syndrome; plaque neovascularization; telangiectasia; hemophilic joints; angiofibroma; fibromuscular dysplasia; wound granulation; Crohn's disease; and atherosclerosis. Moreover, antagonists of polypeptides

and polynucleotides of the invention may be useful in treating anti-hyperproliferative diseases and/or anti-inflammatory known in the art and/or described herein.

- [01233] One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof.

***Example 43: Cellular Adhesion Molecule (CAM) Expression  
on Endothelial Cells***

- [01234] The recruitment of lymphocytes to areas of inflammation and angiogenesis involves specific receptor-ligand interactions between cell surface adhesion molecules (CAMs) on lymphocytes and the vascular endothelium. The adhesion process, in both normal and pathological settings, follows a multi-step cascade that involves intercellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1 (VCAM-1), and endothelial leukocyte adhesion molecule-1 (E-selectin) expression on endothelial cells (EC). The expression of these molecules and others on the vascular endothelium determines the efficiency with which leukocytes may adhere to the local vasculature and extravasate into the local tissue during the development of an inflammatory response. The local concentration of cytokines and growth factor participate in the modulation of the expression of these CAMs.

- [01235] Briefly, endothelial cells (e.g., Human Umbilical Vein Endothelial cells (HUVECs)) are grown in a standard 96 well plate to confluence, growth medium is removed from the cells and replaced with 100  $\mu$ l of 199 Medium (10% fetal bovine serum (FBS)). Samples for testing and positive or negative controls are added to the plate in triplicate (in 10  $\mu$ l volumes). Plates are then incubated at 37°C for either 5 h (selectin and integrin expression) or 24 h (integrin expression only). Plates are aspirated to remove medium and 100  $\mu$ l of 0.1% paraformaldehyde-PBS(with Ca<sup>++</sup> and Mg<sup>++</sup>) is added to each well. Plates are held at 4°C for 30 min. Fixative is removed from the wells and wells are washed 1X with PBS(+Ca,Mg) + 0.5% BSA and drained. 10  $\mu$ l of diluted primary antibody is added to the test and control wells. Anti-ICAM-1-Biotin, Anti-VCAM-1-Biotin and Anti-E-selectin-Biotin are used at a concentration of 10  $\mu$ g/ml

(1:10 dilution of 0.1 mg/ml stock antibody). Cells are incubated at 37°C for 30 min. in a humidified environment. Wells are washed three times with PBS(+Ca,Mg) + 0.5% BSA. 20 µl of diluted ExtrAvidin-Alkaline Phosphatase (1:5,000 dilution, referred to herein as the working dilution) are added to each well and incubated at 37°C for 30 min. Wells are washed three times with PBS(+Ca,Mg)+0.5% BSA. Dissolve 1 tablet of p-Nitrophenol Phosphate pNPP per 5 ml of glycine buffer (pH 10.4). 100 µl of pNPP substrate in glycine buffer is added to each test well. Standard wells in triplicate are prepared from the working dilution of the ExtrAvidin-Alkaline Phosphatase in glycine buffer: 1:5,000 ( $10^0$ ) >  $10^{-0.5}$  >  $10^{-1}$  >  $10^{-1.5}$ . 5 µl of each dilution is added to triplicate wells and the resulting AP content in each well is 5.50 ng, 1.74 ng, 0.55 ng, 0.18 ng. 100 µl of pNPP reagent is then added to each of the standard wells. The plate is incubated at 37°C for 4h. A volume of 50 µl of 3M NaOH is added to all wells. The plate is read on a plate reader at 405 nm using the background subtraction option on blank wells filled with glycine buffer only. Additionally, the template is set up to indicate the concentration of AP-conjugate in each standard well [5.50 ng; 1.74 ng; 0.55 ng; 0.18 ng]. Results are indicated as amount of bound AP-conjugate in each sample.

#### ***Example 44: Alamar Blue Endothelial Cells Proliferation Assay***

[01236] This assay may be used to quantitatively determine protein mediated inhibition of bFGF-induced proliferation of Bovine Lymphatic Endothelial Cells (LECs), Bovine Aortic Endothelial Cells (BAECs) or Human Microvascular Uterine Myometrial Cells (UTMECs). This assay incorporates a fluorometric growth indicator based on detection of metabolic activity. A standard Alamar Blue Proliferation Assay is prepared in EGM-2MV with 10 ng /ml of bFGF added as a source of endothelial cell stimulation. This assay may be used with a variety of endothelial cells with slight changes in growth medium and cell concentration. Dilutions of the protein batches to be tested are diluted as appropriate. Serum-free medium (GIBCO SFM) without bFGF is used as a non-stimulated control and Angiostatin or TSP-1 are included as a known inhibitory controls.

[01237] Briefly, LEC, BAECs or UTMECs are seeded in growth media at a density of 5000 to 2000 cells/well in a 96 well plate and placed at 37degrees C overnight. After the overnight incubation of the cells, the growth media is removed and replaced with

GIBCO EC-SFM. The cells are treated with the appropriate dilutions of the protein of interest or control protein sample(s) (prepared in SFM ) in triplicate wells with additional bFGF to a concentration of 10 ng/ ml. Once the cells have been treated with the samples, the plate(s) is/are placed back in the 37° C incubator for three days. After three days 10 ml of stock alamar blue (Biosource Cat# DAL1100) is added to each well and the plate(s) is/are placed back in the 37°C incubator for four hours. The plate(s) are then read at 530nm excitation and 590nm emission using the CytoFluor fluorescence reader. Direct output is recorded in relative fluorescence units.

- [01238] Alamar blue is an oxidation-reduction indicator that both fluoresces and changes color in response to chemical reduction of growth medium resulting from cell growth. As cells grow in culture, innate metabolic activity results in a chemical reduction of the immediate surrounding environment. Reduction related to growth causes the indicator to change from oxidized (non-fluorescent blue) form to reduced (fluorescent red) form (i.e., stimulated proliferation will produce a stronger signal and inhibited proliferation will produce a weaker signal and the total signal is proportional to the total number of cells as well as their metabolic activity). The background level of activity is observed with the starvation medium alone. This is compared to the output observed from the positive control samples (bFGF in growth medium) and protein dilutions.

#### ***Example 45: Detection of Inhibition of a Mixed Lymphocyte Reaction***

- [01239] This assay can be used to detect and evaluate inhibition of a Mixed Lymphocyte Reaction (MLR) by gene products (e.g., isolated polypeptides). Inhibition of a MLR may be due to a direct effect on cell proliferation and viability, modulation of costimulatory molecules on interacting cells, modulation of adhesiveness between lymphocytes and accessory cells, or modulation of cytokine production by accessory cells. Multiple cells may be targeted by these polypeptides since the peripheral blood mononuclear fraction used in this assay includes T, B and natural killer lymphocytes, as well as monocytes and dendritic cells.

- [01240] Polypeptides of interest found to inhibit the MLR may find application in diseases associated with lymphocyte and monocyte activation or proliferation. These include, but are not limited to, diseases such as asthma, arthritis, diabetes, inflammatory

skin conditions, psoriasis, eczema, systemic lupus erythematosus, multiple sclerosis, glomerulonephritis, inflammatory bowel disease, crohn's disease, ulcerative colitis, arteriosclerosis, cirrhosis, graft vs. host disease, host vs. graft disease, hepatitis, leukemia and lymphoma.

[01241] Briefly, PBMCs from human donors are purified by density gradient centrifugation using Lymphocyte Separation Medium (LSM<sup>®</sup>, density 1.0770 g/ml, Organon Teknika Corporation, West Chester, PA). PBMCs from two donors are adjusted to  $2 \times 10^6$  cells/ml in RPMI-1640 (Life Technologies, Grand Island, NY) supplemented with 10% FCS and 2 mM glutamine. PBMCs from a third donor is adjusted to  $2 \times 10^5$  cells/ml. Fifty microliters of PBMCs from each donor is added to wells of a 96-well round bottom microtiter plate. Dilutions of test materials (50  $\mu$ l) is added in triplicate to microtiter wells. Test samples (of the protein of interest) are added for final dilution of 1:4; rhuIL-2 (R&D Systems, Minneapolis, MN, catalog number 202-IL) is added to a final concentration of 1  $\mu$ g/ml; anti-CD4 mAb (R&D Systems, clone 34930.11, catalog number MAB379) is added to a final concentration of 10  $\mu$ g/ml. Cells are cultured for 7-8 days at 37°C in 5% CO<sub>2</sub>, and 1  $\mu$ C of [<sup>3</sup>H] thymidine is added to wells for the last 16 hrs of culture. Cells are harvested and thymidine incorporation determined using a Packard TopCount. Data is expressed as the mean and standard deviation of triplicate determinations.

[01242] Samples of the protein of interest are screened in separate experiments and compared to the negative control treatment, anti-CD4 mAb, which inhibits proliferation of lymphocytes and the positive control treatment, IL-2 (either as recombinant material or supernatant), which enhances proliferation of lymphocytes.

[01243] One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof.

#### *Example 46: Assays for Protease Activity*

[01244] The following assay may be used to assess protease activity of the polypeptides of the invention.

- [01245] Gelatin and casein zymography are performed essentially as described (Heusen et al., Anal. Biochem., 102:196-202 (1980); Wilson et al., Journal of Urology, 149:653-658 (1993)). Samples are run on 10% polyacrylamide/0.1% SDS gels containing 1% gelatin or casein, soaked in 2.5% triton at room temperature for 1 hour, and in 0.1M glycine, pH 8.3 at 37°C 5 to 16 hours. After staining in amido black areas of proteolysis appear as clear areas against the blue-black background. Trypsin (Sigma T8642) is used as a positive control.
- [01246] Protease activity is also determined by monitoring the cleavage of n-benzoyl-L-arginine ethyl ester (BAEE) (Sigma B-4500). Reactions are set up in (25mMNaPO<sub>4</sub>, 1mM EDTA, and 1mM BAEE), pH 7.5. Samples are added and the change in absorbance at 260nm is monitored on the Beckman DU-6 spectrophotometer in the time-drive mode. Trypsin is used as a positive control.
- [01247] Additional assays based upon the release of acid-soluble peptides from casein or hemoglobin measured as absorbance at 280 nm or colorimetrically using the Folin method are performed as described in Bergmeyer, et al., Methods of Enzymatic Analysis, 5 (1984). Other assays involve the solubilization of chromogenic substrates (Ward, Applied Science, 251-317 (1983)).

#### ***Example 47: Identifying Serine Protease Substrate Specificity***

- [01248] Methods known in the art or described herein may be used to determine the substrate specificity of the polypeptides of the present invention having serine protease activity. A preferred method of determining substrate specificity is by the use of positional scanning synthetic combinatorial libraries as described in GB 2 324 529 (incorporated herein in its entirety).

#### ***Example 48: Ligand Binding Assays***

- [01249] The following assay may be used to assess ligand binding activity of the polypeptides of the invention.
- [01250] Ligand binding assays provide a direct method for ascertaining receptor pharmacology and are adaptable to a high throughput format. The purified ligand for a

polypeptide is radiolabeled to high specific activity (50-2000 Ci/mmol) for binding studies. A determination is then made that the process of radiolabeling does not diminish the activity of the ligand towards its polypeptide. Assay conditions for buffers, ions, pH and other modulators such as nucleotides are optimized to establish a workable signal to noise ratio for both membrane and whole cell polypeptide sources. For these assays, specific polypeptide binding is defined as total associated radioactivity minus the radioactivity measured in the presence of an excess of unlabeled competing ligand. Where possible, more than one competing ligand is used to define residual nonspecific binding.

#### ***Example 49: Functional Assay in *Xenopus* Oocytes***

[01251] Capped RNA transcripts from linearized plasmid templates encoding the polypeptides of the invention are synthesized *in vitro* with RNA polymerases in accordance with standard procedures. *In vitro* transcripts are suspended in water at a final concentration of 0.2 mg/ml. Ovarian lobes are removed from adult female toads, Stage V defolliculated oocytes are obtained, and RNA transcripts (10 ng/oocyte) are injected in a 50 nl bolus using a microinjection apparatus. Two electrode voltage clamps are used to measure the currents from individual *Xenopus oocytes* in response polypeptides and polypeptide agonist exposure. Recordings are made in Ca<sup>2+</sup> free Barth's medium at room temperature. The *Xenopus* system can be used to screen known ligands and tissue/cell extracts for activating ligands.

#### ***Example 50: Microphysiometric Assays***

[01252] Activation of a wide variety of secondary messenger systems results in extrusion of small amounts of acid from a cell. The acid formed is largely as a result of the increased metabolic activity required to fuel the intracellular signaling process. The pH changes in the media surrounding the cell are very small but are detectable by the CYTOSENSOR microphysiometer (Molecular Devices Ltd., Menlo Park, Calif.). The CYTOSENSOR is thus capable of detecting the activation of polypeptide which is coupled to an energy utilizing intracellular signaling pathway.

***Example 51: Extract/Cell Supernatant Screening***

- [01253] A large number of mammalian receptors exist for which there remains, as yet, no cognate activating ligand (agonist). Thus, active ligands for these receptors may not be included within the ligands banks as identified to date. Accordingly, the polypeptides of the invention can also be functionally screened (using calcium, cAMP, microphysiometer, oocyte electrophysiology, etc., functional screens) against tissue extracts to identify its natural ligands. Extracts that produce positive functional responses can be sequentially subfractionated until an activating ligand is isolated and identified.

***Example 52: Calcium and cAMP Functional Assays***

- [01254] Seven transmembrane receptors which are expressed in HEK 293 cells have been shown to be coupled functionally to activation of PLC and calcium mobilization and/or cAMP stimulation or inhibition. Basal calcium levels in the HEK 293 cells in receptor-transfected or vector control cells were observed to be in the normal, 100 nM to 200 nM, range. HEK 293 cells expressing recombinant receptors are loaded with fura 2 and in a single day >150 selected ligands or tissue/cell extracts are evaluated for agonist induced calcium mobilization. Similarly, HEK 293 cells expressing recombinant receptors are evaluated for the stimulation or inhibition of cAMP production using standard cAMP quantitation assays. Agonists presenting a calcium transient or cAMP fluctuation are tested in vector control cells to determine if the response is unique to the transfected cells expressing receptor.

***Example 53: ATP-binding assay***

- [01255] The following assay may be used to assess ATP-binding activity of polypeptides of the invention.
- [01256] ATP-binding activity of the polypeptides of the invention may be detected using the ATP-binding assay described in U.S. Patent 5,858,719, which is herein



incorporated by reference in its entirety. Briefly, ATP-binding to polypeptides of the invention is measured via photoaffinity labeling with 8-azido-ATP in a competition assay. Reaction mixtures containing 1 mg/ml of the ABC transport protein of the present invention are incubated with varying concentrations of ATP, or the non-hydrolyzable ATP analog adenylyl-5'-imidodiphosphate for 10 minutes at 4°C. A mixture of 8-azido-ATP (Sigma Chem. Corp., St. Louis, MO.) plus 8-azido-ATP ( $^{32}\text{P}$ -ATP) (5 mCi/ $\mu\text{mol}$ , ICN, Irvine CA.) is added to a final concentration of 100  $\mu\text{M}$  and 0.5 ml aliquots are placed in the wells of a porcelain spot plate on ice. The plate is irradiated using a short wave 254 nm UV lamp at a distance of 2.5 cm from the plate for two one-minute intervals with a one-minute cooling interval in between. The reaction is stopped by addition of dithiothreitol to a final concentration of 2mM. The incubations are subjected to SDS-PAGE electrophoresis, dried, and autoradiographed. Protein bands corresponding to the particular polypeptides of the invention are excised, and the radioactivity quantified. A decrease in radioactivity with increasing ATP or adenylyl-5'-imidodiphosphate provides a measure of ATP affinity to the polypeptides.

### *Example 54: Small Molecule Screening*

[01257] This invention is particularly useful for screening therapeutic compounds by using the polypeptides of the invention, or binding fragments thereof, in any of a variety of drug screening techniques. The polypeptide or fragment employed in such a test may be affixed to a solid support, expressed on a cell surface, free in solution, or located intracellularly. One method of drug screening utilizes eukaryotic or prokaryotic host cells which are stably transformed with recombinant nucleic acids expressing the polypeptide or fragment. Drugs are screened against such transformed cells in competitive binding assays. One may measure, for example, the formulation of complexes between the agent being tested and polypeptide of the invention.

[01258] Thus, the present invention provides methods of screening for drugs or any other agents which affect activities mediated by the polypeptides of the invention. These methods comprise contacting such an agent with a polypeptide of the invention or fragment thereof and assaying for the presence of a complex between the agent and the

polypeptide or fragment thereof, by methods well known in the art. In such a competitive binding assay, the agents to screen are typically labeled. Following incubation, free agent is separated from that present in bound form, and the amount of free or uncomplexed label is a measure of the ability of a particular agent to bind to the polypeptides of the invention.

[01259] Another technique for drug screening provides high throughput screening for compounds having suitable binding affinity to the polypeptides of the invention, and is described in great detail in European Patent Application 84/03564, published on September 13, 1984, which is herein incorporated by reference in its entirety. Briefly stated, large numbers of different small molecule test compounds are synthesized on a solid substrate, such as plastic pins or some other surface. The test compounds are reacted with polypeptides of the invention and washed. Bound polypeptides are then detected by methods well known in the art. Purified polypeptides are coated directly onto plates for use in the aforementioned drug screening techniques. In addition, non-neutralizing antibodies may be used to capture the peptide and immobilize it on the solid support.

[01260] This invention also contemplates the use of competitive drug screening assays in which neutralizing antibodies capable of binding polypeptides of the invention specifically compete with a test compound for binding to the polypeptides or fragments thereof. In this manner, the antibodies are used to detect the presence of any peptide which shares one or more antigenic epitopes with a polypeptide of the invention.

### *Example 55: Phosphorylation Assay*

[01261] In order to assay for phosphorylation activity of the polypeptides of the invention, a phosphorylation assay as described in U.S. Patent 5,958,405 (which is herein incorporated by reference) is utilized. Briefly, phosphorylation activity may be measured by phosphorylation of a protein substrate using gamma-labeled  $^{32}\text{P}$ -ATP and quantitation of the incorporated radioactivity using a gamma radioisotope counter. The polypeptides of the invention are incubated with the protein substrate,  $^{32}\text{P}$ -ATP, and a kinase buffer. The  $^{32}\text{P}$  incorporated into the substrate is then separated from free  $^{32}\text{P}$ -ATP by electrophoresis, and the incorporated  $^{32}\text{P}$  is counted and compared to a negative control.

Radioactivity counts above the negative control are indicative of phosphorylation activity of the polypeptides of the invention.

***Example 56: Detection of Phosphorylation Activity (Activation) of the Polypeptides of the Invention in the Presence of Polypeptide Ligands***

[01262] Methods known in the art or described herein may be used to determine the phosphorylation activity of the polypeptides of the invention. A preferred method of determining phosphorylation activity is by the use of the tyrosine phosphorylation assay as described in U.S. Patent 5,817,471 (incorporated herein by reference).

***Example 57: Identification Of Signal Transduction Proteins That Interact With Polypeptides Of The Present Invention***

[01263] The purified polypeptides of the invention are research tools for the identification, characterization and purification of additional signal transduction pathway proteins or receptor proteins. Briefly, labeled receptor PTK polypeptide is useful as a reagent for the purification of molecules with which it interacts. In one embodiment of affinity purification, receptor PTK polypeptide is covalently coupled to a chromatography column. Cell-free extract derived from putative target cells, such as carcinoma tissues, is passed over the column, and molecules with appropriate affinity bind to the receptor PTK polypeptides, or specific phosphotyrosine-recognition domains thereof. The receptor PTK polypeptide interacting protein-complex is recovered from the column, dissociated, and the recovered molecule subjected to N-terminal protein sequencing. This amino acid sequence is then used to identify the captured molecule or to design degenerate oligonucleotide probes for cloning the relevant gene from an appropriate cDNA library.

***Example 58: IL-6 Bioassay***

[01264] To test the proliferative effects of the polypeptides of the invention, the IL-6 Bioassay as described by Marz *et al.* is utilized (*Proc. Natl. Acad. Sci., U.S.A.*, 95:3251-56 (1998), which is herein incorporated by reference). Briefly, IL-6 dependent B9 murine cells are washed three times in IL-6 free medium and plated at a concentration of 5,000 cells per well in 50  $\mu$ l, and 50  $\mu$ l of the IL-6-like polypeptide is added. After 68 hrs. at 37°C, the number of viable cells is measured by adding the tetrazolium salt thiazolyl blue (MTT) and incubating for a further 4 hrs. at 37°C. B9 cells are lysed by SDS and optical density is measured at 570 nm. Controls containing IL-6 (positive) and no cytokine (negative) are utilized. Enhanced proliferation in the test sample(s) relative to the negative control is indicative of proliferative effects mediated by polypeptides of the invention.

#### ***Example 59: Support of Chicken Embryo Neuron Survival***

[01265] To test whether sympathetic neuronal cell viability is supported by polypeptides of the invention, the chicken embryo neuronal survival assay of Senaldi *et al* is utilized (*Proc. Natl. Acad. Sci., U.S.A.*, 96:11458-63 (1998), which is herein incorporated by reference). Briefly, motor and sympathetic neurons are isolated from chicken embryos, resuspended in L15 medium (with 10% FCS, glucose, sodium selenite, progesterone, conalbumin, putrescine, and insulin; Life Technologies, Rockville, MD.) and Dulbecco's modified Eagles medium [with 10% FCS, glutamine, penicillin, and 25 mM Hepes buffer (pH 7.2); Life Technologies, Rockville, MD.], respectively, and incubated at 37°C in 5% CO<sub>2</sub> in the presence of different concentrations of the purified IL-6-like polypeptide, as well as a negative control lacking any cytokine. After 3 days, neuron survival is determined by evaluation of cellular morphology, and through the use of the colorimetric assay of Mosmann (Mossmann, T., *J. Immunol. Methods*, 65:55-63 (1983)). Enhanced neuronal cell viability as compared to the controls lacking cytokine is indicative of the ability of the inventive purified IL-6-like polypeptide(s) to enhance the survival of neuronal cells.

#### ***Example 60: Assay for Phosphatase Activity***

[01266] The following assay may be used to assess serine/threonine phosphatase (PTPase) activity of the polypeptides of the invention.

[01267] In order to assay for serine/threonine phosphatase (PTPase) activity, assays can be utilized which are widely known to those skilled in the art. For example, the serine/threonine phosphatase (PSPase) activity is measured using a PSPase assay kit from New England Biolabs, Inc. Myelin basic protein (MyBP), a substrate for PSPase, is phosphorylated on serine and threonine residues with cAMP-dependent Protein Kinase in the presence of [<sup>32</sup>P]ATP. Protein serine/threonine phosphatase activity is then determined by measuring the release of inorganic phosphate from 32P-labeled MyBP.

***Example 61: Interaction of Serine/Threonine Phosphatases with other Proteins***

[01268] The polypeptides of the invention with serine/threonine phosphatase activity as determined in Example 60 are research tools for the identification, characterization and purification of additional interacting proteins or receptor proteins, or other signal transduction pathway proteins. Briefly, labeled polypeptide(s) of the invention is useful as a reagent for the purification of molecules with which it interacts. In one embodiment of affinity purification, polypeptide of the invention is covalently coupled to a chromatography column. Cell-free extract derived from putative target cells, such as neural or liver cells, is passed over the column, and molecules with appropriate affinity bind to the polypeptides of the invention. The polypeptides of the invention -complex is recovered from the column, dissociated, and the recovered molecule subjected to N-terminal protein sequencing. This amino acid sequence is then used to identify the captured molecule or to design degenerate oligonucleotide probes for cloning the relevant gene from an appropriate cDNA library.

***Example 62: Assaying for Heparanase Activity***

[01269] In order to assay for heparanase activity of the polypeptides of the invention, the heparanase assay described by Vlodavsky et al is utilized (Vlodavsky, I., et al., Nat. Med., 5:793-802 (1999)). Briefly, cell lysates, conditioned media or intact cells ( $1 \times 10^6$

cells per 35-mm dish) are incubated for 18 hrs at 37°C, pH 6.2-6.6, with <sup>35</sup>S-labeled ECM or soluble ECM derived peak I proteoglycans. The incubation medium is centrifuged and the supernatant is analyzed by gel filtration on a Sepharose CL-6B column (0.9 x 30 cm). Fractions are eluted with PBS and their radioactivity is measured. Degradation fragments of heparan sulfate side chains are eluted from Sepharose 6B at  $0.5 < K_{av} < 0.8$  (peak II). Each experiment is done at least three times. Degradation fragments corresponding to "peak II," as described by Vlodavsky et al., is indicative of the activity of the polypeptides of the invention in cleaving heparan sulfate.

### ***Example 63: Immobilization of biomolecules***

[01270] This example provides a method for the stabilization of polypeptides of the invention in non-host cell lipid bilayer constructs (see, e.g., Bieri et al., Nature Biotech 17:1105-1108 (1999), hereby incorporated by reference in its entirety herein) which can be adapted for the study of polypeptides of the invention in the various functional assays described above. Briefly, carbohydrate-specific chemistry for biotinylation is used to confine a biotin tag to the extracellular domain of the polypeptides of the invention, thus allowing uniform orientation upon immobilization. A 50uM solution of polypeptides of the invention in washed membranes is incubated with 20 mM NaIO<sub>4</sub> and 1.5 mg/ml (4mM) BACH or 2 mg/ml (7.5mM) biotin-hydrazide for 1 hr at room temperature (reaction volume, 150ul). Then the sample is dialyzed (Pierce Slidealizer Cassett, 10 kDa cutoff; Pierce Chemical Co., Rockford IL) at 4C first for 5 h, exchanging the buffer after each hour, and finally for 12 h against 500 ml buffer R (0.15 M NaCl, 1 mM MgCl<sub>2</sub>, 10 mM sodium phosphate, pH7). Just before addition into a cuvette, the sample is diluted 1:5 in buffer ROG50 (Buffer R supplemented with 50 mM octylglucoside).

### ***Example 64: TAQMAN***

[01271] Quantitative PCR (QPCR). Total RNA from cells in culture are extracted by Trizol separation as recommended by the supplier (LifeTechnologies). (Total RNA is

treated with DNase I (Life Technologies) to remove any contaminating genomic DNA before reverse transcription.) Total RNA (50 ng) is used in a one-step, 50ul, RT-QPCR, consisting of Taqman Buffer A (Perkin-Elmer; 50 mM KCl/10 mM Tris, pH 8.3), 5.5 mM MgCl<sub>2</sub>, 240 μM each dNTP, 0.4 units RNase inhibitor(Promega), 8%glycerol, 0.012% Tween-20, 0.05% gelatin, 0.3uM primers, 0.1uM probe, 0.025units Amplitaq Gold (Perkin-Elmer) and 2.5 units Superscript II reverse transcriptase (Life Technologies). As a control for genomic contamination, parallel reactions are setup without reverse transcriptase. The relative abundance of (unknown) and 18S RNAs are assessed by using the Applied Biosystems Prism 7700 Sequence Detection System (Livak, K. J., Flood, S. J., Marmaro, J., Giusti, W. & Deetz, K. (1995) PCR Methods Appl. 4, 357-362). Reactions are carried out at 48°C for 30 min, 95°C for 10 min, followed by 40 cycles of 95°C for 15s, 60°C for 1 min. Reactions are performed in triplicate.

- [01272] Primers (f & r) and FRET probes sets are designed using Primer Express Software (Perkin-Elmer). Probes are labeled at the 5'-end with the reporter dye 6-FAM and on the 3'-end with the quencher dye TAMRA (Biosource International, Camarillo, CA or Perkin-Elmer).

### *Example 65: Assays for Metalloproteinase Activity*

- [01273] Metalloproteinases (EC 3.4.24.-) are peptide hydrolases which use metal ions, such as Zn<sup>2+</sup>, as the catalytic mechanism. Metalloproteinase activity of polypeptides of the present invention can be assayed according to the following methods.

#### *Proteolysis of alpha-2-macroglobulin*

- [01274] To confirm protease activity, purified polypeptides of the invention are mixed with the substrate alpha-2-macroglobulin (0.2 unit/ml; Boehringer Mannheim, Germany) in 1x assay buffer (50 mM HEPES, pH 7.5, 0.2 M NaCl, 10 mM CaCl<sub>2</sub>, 25 μM ZnCl<sub>2</sub> and 0.05% Brij-35) and incubated at 37°C for 1-5 days. Trypsin is used as positive control. Negative controls contain only alpha-2-macroglobulin in assay buffer. The samples are collected and boiled in SDS-PAGE sample buffer containing 5% 2-mercaptoethanol for 5-min, then loaded onto 8% SDS-polyacrylamide gel. After

electrophoresis the proteins are visualized by silver staining. Proteolysis is evident by the appearance of lower molecular weight bands as compared to the negative control.

#### *Inhibition of alpha-2-macroglobulin proteolysis by inhibitors of metalloproteinases*

[01275] Known metalloproteinase inhibitors (metal chelators (EDTA, EGTA, AND  $\text{HgCl}_2$ ), peptide metalloproteinase inhibitors (TIMP-1 and TIMP-2), and commercial small molecule MMP inhibitors) are used to characterize the proteolytic activity of polypeptides of the invention. The three synthetic MMP inhibitors used are: MMP inhibitor I,  $[\text{IC}_{50} = 1.0 \mu\text{M}$  against MMP-1 and MMP-8;  $\text{IC}_{50} = 30 \mu\text{M}$  against MMP-9;  $\text{IC}_{50} = 150 \mu\text{M}$  against MMP-3]; MMP-3 (stromelysin-1) inhibitor I [ $\text{IC}_{50} = 5 \mu\text{M}$  against MMP-3], and MMP-3 inhibitor II [ $\text{K}_i = 130 \text{ nM}$  against MMP-3]; inhibitors available through Calbiochem, catalog # 444250, 444218, and 444225, respectively). Briefly, different concentrations of the small molecule MMP inhibitors are mixed with purified polypeptides of the invention ( $50 \mu\text{g/ml}$ ) in  $22.9 \mu\text{l}$  of 1x HEPES buffer (50 mM HEPES, pH 7.5, 0.2 M NaCl, 10 mM  $\text{CaCl}_2$ , 25  $\mu\text{M}$   $\text{ZnCl}_2$  and 0.05%Brij-35) and incubated at room temperature ( $24^\circ\text{C}$ ) for 2-hr, then  $7.1 \mu\text{l}$  of substrate alpha-2-macroglobulin (0.2 unit/ml) is added and incubated at  $37^\circ\text{C}$  for 20-hr. The reactions are stopped by adding 4x sample buffer and boiled immediately for 5 minutes. After SDS-PAGE, the protein bands are visualized by silver stain.

#### *Synthetic Fluorogenic Peptide Substrates Cleavage Assay*

[01276] The substrate specificity for polypeptides of the invention with demonstrated metalloproteinase activity can be determined using synthetic fluorogenic peptide substrates (purchased from BACHEM Bioscience Inc). Test substrates include, M-1985, M-2225, M-2105, M-2110, and M-2255. The first four are MMP substrates and the last one is a substrate of tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) converting enzyme (TACE). All the substrates are prepared in 1:1 dimethyl sulfoxide (DMSO) and water. The stock solutions are 50-500  $\mu\text{M}$ . Fluorescent assays are performed by using a Perkin Elmer LS 50B luminescence spectrometer equipped with a constant temperature water bath. The excitation  $\lambda$  is 328 nm and the emission  $\lambda$  is 393 nm. Briefly, the assay is carried out by incubating  $176 \mu\text{l}$  1x HEPES buffer (0.2 M NaCl, 10 mM  $\text{CaCl}_2$ , 0.05% Brij-35 and 50 mM HEPES, pH 7.5) with  $4 \mu\text{l}$  of substrate solution (50  $\mu\text{M}$ ) at  $25^\circ\text{C}$  for 15 minutes,



and then adding 20  $\mu$ l of a purified polypeptide of the invention into the assay cuvet. The final concentration of substrate is 1  $\mu$ M. Initial hydrolysis rates are monitored for 30-min.

***Example 66: Characterization of the cDNA contained in a deposited plasmid***

[01277] The size of the cDNA insert contained in a deposited plasmid may be routinely determined using techniques known in the art, such as PCR amplification using synthetic primers hybridizable to the 3' and 5' ends of the cDNA sequence. For example, two primers of 17-30 nucleotides derived from each end of the cDNA (i.e., hybridizable to the absolute 5' nucleotide or the 3' nucleotide end of the sequence of SEQ ID NO:X, respectively) are synthesized and used to amplify the cDNA using the deposited cDNA plasmid as a template. The polymerase chain reaction is carried out under routine conditions, for instance, in 25  $\mu$ l of reaction mixture with 0.5  $\mu$ g of the above cDNA template. A convenient reaction mixture is 1.5-5 mM  $MgCl_2$ , 0.01% (w/v) gelatin, 20  $\mu$ M each of dATP, dCTP, dGTP, dTTP, 25 pmol of each primer and 0.25 Unit of Taq polymerase. Thirty five cycles of PCR (denaturation at 94 degree C for 1 min; annealing at 55 degree C for 1 min; elongation at 72 degree C for 1 min) are performed with a Perkin-Elmer Cetus automated thermal cycler. The amplified product is analyzed by agarose gel electrophoresis. The PCR product is verified to be the selected sequence by subcloning and sequencing the DNA product.

[01278] Use of the above methodologies and/or other methodologies known in the art generates fragments from the clone corresponding to the approximate fragments described in Table 8, below. Accordingly, Table 8 provides a physical characterization of certain clones encompassed by the invention. The first column provides the unique clone identifier, "Clone ID NO:Z", for cDNA clones of the invention, as described in Table 1A. The second column provides the approximate size of the cDNA insert contained in the corresponding cDNA clone.

**TABLE 8**

Clone ID NO:Z	cDNA Insert Size:
-----	-----
HCUHF41	500
-----	-----
HCUHS19	300
-----	-----
HCWBU49	400
-----	-----
HDPBS54	2100
-----	-----
HDPJI05	2900
-----	-----
HHEKP61	1500
-----	-----
HMAKA11	1700
-----	-----
HMSG27	1600
-----	-----
HMSJW12	3100
-----	-----
HMVBO34	1200
-----	-----
HMVDU16	1400
-----	-----
HNGBC50	1700
-----	-----
HNGEP64	1200
-----	-----
HNGEU35	700
-----	-----
HNGFK28	900
-----	-----
HNHGQ79	1000
-----	-----
HNHIA73	300
-----	-----
HTOAF15	1400
-----	-----
HTXJN04	1500
-----	-----
HTXMY23	1100
-----	-----
HWADF26	900
-----	-----
HYABP53	1500
-----	-----

HWBFY46	1800
HWBAJ13	1800
HTWFJ71	600
HTOJL36	1700
HTOHH78	2100
HTOF018	2200
HTGAD16	1000
HSAWC55	700
HSAUQ81	400
HSATC79	700
HNHOF94	800
HNHFF79	300
HNHEQ03	700
HNHDY14	800
HNHDV95	700
HNHDD52	300
HNHCA27	500
HNHBI48	600
HNHBF47	1000
HNHAB36	900
HNGPN54	500
HNGPL75	1100
HNGMW65	400
HNGKC69	800
HNGJE23	1100

HNGFX75	1100
HNGFH30	2800
HNGCE81	1700
HNGCE40	800
HNGCC02	500
HNFCV02	900
HNEDF15	1300
HMWIQ64	1600
HMWIM05	600
HMWHB71	1200
HMWGQ48	700
HMSHD80	1100
HMSFR23	2000
HMOAD90	400
HMOAD60	200
HMMBT03	700
HMMAB96	800
HMAIH15	500
HMAIA55	1100
HLYCQ43	800
HLMMK61	500
HLMBX91	900
HLMBQ48	400
HJABQ75	1100
HHEPT05	2500

HHEPT03	1100
-----	-----
HDTBD67	2200
-----	-----
HDTAT80	2400
-----	-----
HDTAA31	1500
-----	-----
HDPFZ70	800
-----	-----
HCWHF76	700
-----	-----
HCUHH95	2200
-----	-----
HCUDQ81	300
-----	-----
HCFON45	1000
-----	-----
HMBBX72	900
-----	-----

[01279] It will be clear that the invention may be practiced otherwise than as particularly described in the foregoing description and examples. Numerous modifications and variations of the present invention are possible in light of the above teachings and, therefore, are within the scope of the appended claims.

[01280] The entire disclosure of each document cited (including patents, patent applications, journal articles, abstracts, laboratory manuals, books, or other disclosures) in the Background of the Invention, Detailed Description, and Examples is hereby incorporated herein by reference. In addition, the CD-R copy of the sequence listing submitted herewith and the corresponding computer readable form are both incorporated herein by reference in their entireties. The specification and Sequence Listing of each of the following U.S. applications are herein incorporated by reference in their entirety: Application No. 60/179,065, filed on 31-Jan-2000; Application No. 60/180,628, filed on 04-Feb-2000; Application No. 60/214,886, filed on 28-Jun-2000; Application No. 60/217,487, filed on 11-Jul-2000; Application No. 60/225,758, filed on 14-Aug-2000; Application No. 60/220,963, filed on 26-Jul-2000; Application No. 60/217,496, filed on 11-Jul-2000; Application No. 60/225,447, filed on 14-Aug-2000; Application No. 60/218,290, filed on 14-Jul-2000; Application No. 60/225,757, filed on 14-Aug-2000; Application No. 60/226,868, filed on 22-Aug-2000; Application No. 60/216,647, filed on 07-Jul-2000; Application No. 60/225,267, filed on 14-Aug-2000; Application No. 60/216,880, filed on 07-Jul-2000; Application No. 60/225,270, filed on 14-Aug-2000; Application No. 60/251,869, filed on 08-Dec-2000; Application No. 60/235,834, filed on 27-Sep-2000; Application No. 60/234,274, filed on 21-Sep-2000; Application No. 60/234,223, filed on 21-Sep-2000; Application No. 60/228,924, filed on 30-Aug-2000; Application No. 60/224,518, filed on 14-Aug-2000; Application No. 60/236,369, filed on 29-Sep-2000; Application No. 60/224,519, filed on 14-Aug-2000; Application No. 60/220,964, filed on 26-Jul-2000; Application No. 60/241,809, filed on 20-Oct-2000; Application No. 60/249,299, filed on 17-Nov-2000; Application No. 60/236,327, filed on 29-Sep-2000; Application No. 60/241,785, filed on 20-Oct-2000; Application No. 60/244,617, filed on 01-Nov-2000; Application No. 60/225,268, filed on 14-Aug-2000; Application No. 60/236,368, filed on 29-Sep-2000; Application No. 60/251,856, filed on 08-Dec-2000; Application No. 60/251,868, filed on 08-Dec-2000; Application No.

60/229,344, filed on 01-Sep-2000; Application No. 60/234,997, filed on 25-Sep-2000; Application No. 60/229,343, filed on 01-Sep-2000; Application No. 60/229,345, filed on 01-Sep-2000; Application No. 60/229,287, filed on 01-Sep-2000; Application No. 60/229,513, filed on 05-Sep-2000; Application No. 60/231,413, filed on 08-Sep-2000; Application No. 60/229,509, filed on 05-Sep-2000; Application No. 60/236,367, filed on 29-Sep-2000; Application No. 60/237,039, filed on 02-Oct-2000; Application No. 60/237,038, filed on 02-Oct-2000; Application No. 60/236,370, filed on 29-Sep-2000; Application No. 60/236,802, filed on 02-Oct-2000; Application No. 60/237,037, filed on 02-Oct-2000; Application No. 60/237,040, filed on 02-Oct-2000; Application No. 60/240,960, filed on 20-Oct-2000; Application No. 60/239,935, filed on 13-Oct-2000; Application No. 60/239,937, filed on 13-Oct-2000; Application No. 60/241,787, filed on 20-Oct-2000; Application No. 60/246,474, filed on 08-Nov-2000; Application No. 60/246,532, filed on 08-Nov-2000; Application No. 60/249,216, filed on 17-Nov-2000; Application No. 60/249,210, filed on 17-Nov-2000; Application No. 60/226,681, filed on 22-Aug-2000; Application No. 60/225,759, filed on 14-Aug-2000; Application No. 60/225,213, filed on 14-Aug-2000; Application No. 60/227,182, filed on 22-Aug-2000; Application No. 60/225,214, filed on 14-Aug-2000; Application No. 60/235,836, filed on 27-Sep-2000; Application No. 60/230,438, filed on 06-Sep-2000; Application No. 60/215,135, filed on 30-Jun-2000; Application No. 60/225,266, filed on 14-Aug-2000; Application No. 60/249,218, filed on 17-Nov-2000; Application No. 60/249,208, filed on 17-Nov-2000; Application No. 60/249,213, filed on 17-Nov-2000; Application No. 60/249,212, filed on 17-Nov-2000; Application No. 60/249,207, filed on 17-Nov-2000; Application No. 60/249,245, filed on 17-Nov-2000; Application No. 60/249,244, filed on 17-Nov-2000; Application No. 60/249,217, filed on 17-Nov-2000; Application No. 60/249,211, filed on 17-Nov-2000; Application No. 60/249,215, filed on 17-Nov-2000; Application No. 60/249,264, filed on 17-Nov-2000; Application No. 60/249,214, filed on 17-Nov-2000; Application No. 60/249,297, filed on 17-Nov-2000; Application No. 60/232,400, filed on 14-Sep-2000; Application No. 60/231,242, filed on 08-Sep-2000; Application No. 60/232,081, filed on 08-Sep-2000; Application No. 60/232,080, filed on 08-Sep-2000; Application No. 60/231,414, filed on 08-Sep-2000; Application No. 60/231,244, filed on 08-Sep-2000; Application No. 60/233,064, filed on 14-Sep-2000; Application No. 60/233,063, filed on 14-Sep-2000; Application No. 60/232,397, filed on

14-Sep-2000; Application No. 60/232,399, filed on 14-Sep-2000; Application No. 60/232,401, filed on 14-Sep-2000; Application No. 60/241,808, filed on 20-Oct-2000; Application No. 60/241,826, filed on 20-Oct-2000; Application No. 60/241,786, filed on 20-Oct-2000; Application No. 60/241,221, filed on 20-Oct-2000; Application No. 60/246,475, filed on 08-Nov-2000; Application No. 60/231,243, filed on 08-Sep-2000; Application No. 60/233,065, filed on 14-Sep-2000; Application No. 60/232,398, filed on 14-Sep-2000; Application No. 60/234,998, filed on 25-Sep-2000; Application No. 60/246,477, filed on 08-Nov-2000; Application No. 60/246,528, filed on 08-Nov-2000; Application No. 60/246,525, filed on 08-Nov-2000; Application No. 60/246,476, filed on 08-Nov-2000; Application No. 60/246,526, filed on 08-Nov-2000; Application No. PT172, filed on 17-Nov-2000; Application No. 60/246,527, filed on 08-Nov-2000; Application No. 60/246,523, filed on 08-Nov-2000; Application No. 60/246,524, filed on 08-Nov-2000; Application No. 60/246,478, filed on 08-Nov-2000; Application No. 60/246,609, filed on 08-Nov-2000; Application No. 60/246,613, filed on 08-Nov-2000; Application No. 60/249,300, filed on 17-Nov-2000; Application No. 60/249,265, filed on 17-Nov-2000; Application No. 60/246,610, filed on 08-Nov-2000; Application No. 60/246,611, filed on 08-Nov-2000; Application No. 60/230,437, filed on 06-Sep-2000; Application No. 60/251,990, filed on 08-Dec-2000; Application No. 60/251,988, filed on 05-Dec-2000; Application No. 60/251,030, filed on 05-Dec-2000; Application No. 60/251,479, filed on 06-Dec-2000; Application No. PJ005, filed on 05-Dec-2000; Application No. PJ006, filed on 01-Dec-2000; Application No. 60/251,989, filed on 08-Dec-2000; Application No. 60/250,391, filed on 01-Dec-2000; and Application No. 60/254,097, filed on 11-Dec-2000.

[01281] Moreover, the microfiche copy and the corresponding computer readable form of the Sequence Listing of U.S. Application Serial No. 60/179,065, and the hard copy of and the corresponding computer readable form of the Sequence Listing of U.S. Application Serial No. 60/180,628 are also incorporated herein by reference in their entireties.



**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

**B. IDENTIFICATION OF DEPOSIT**

Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*  
10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

May 20, 1997

Accession Number

209059

**C. ADDITIONAL INDICATIONS** *(leave blank if not applicable)*

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**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** *(if the indications are not for all designated States)*

Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

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May 20, 1997

Accession Number

209060

**C. ADDITIONAL INDICATIONS** (leave blank if not applicable)

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**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (if the indications are not for all designated States)


Europe

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Accession Number

209061

**C. ADDITIONAL INDICATIONS** (leave blank if not applicable)

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**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (if the indications are not for all designated States)


**Europe**

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

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(PCT Rule 13bis)

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**B. IDENTIFICATION OF DEPOSIT**

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**C. ADDITIONAL INDICATIONS** (*leave blank if not applicable*)

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**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (*if the indications are not for all designated States*)


Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

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**C. ADDITIONAL INDICATIONS** (*leave blank if not applicable*)

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**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (*if the indications are not for all designated States*)

Europe

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**C. ADDITIONAL INDICATIONS** (leave blank if not applicable)

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**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (if the indications are not for all designated States)

Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
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**B. IDENTIFICATION OF DEPOSIT**

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Accession Number

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**C. ADDITIONAL INDICATIONS** *(leave blank if not applicable)*

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**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** *(if the indications are not for all designated States)*

Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
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**B. IDENTIFICATION OF DEPOSIT**

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**C. ADDITIONAL INDICATIONS** (*leave blank if not applicable*)

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**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (*if the indications are not for all designated States*)


Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
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(PCT Rule 13bis)

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**B. IDENTIFICATION OF DEPOSIT**

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209067

**C. ADDITIONAL INDICATIONS** *(leave blank if not applicable)*

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**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** *(if the indications are not for all designated States)*


Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

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**B. IDENTIFICATION OF DEPOSIT**

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Name of depositary institution: American Type Culture Collection

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10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

May 20, 1997

Accession Number

209068

**C. ADDITIONAL INDICATIONS** *(leave blank if not applicable)*

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**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** *(if the indications are not for all designated States)*


Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

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**E. SEPARATE FURNISHING OF INDICATIONS** *(leave blank if not applicable)*

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13b(s))

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

**B. IDENTIFICATION OF DEPOSIT**

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Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*

10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

May 20, 1997

Accession Number

209069

**C. ADDITIONAL INDICATIONS** *(leave blank if not applicable)*

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**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** *(if the indications are not for all designated States)*


Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

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**B. IDENTIFICATION OF DEPOSIT**

Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*  
10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

January 12, 1998

Accession Number

209579

**C. ADDITIONAL INDICATIONS** *(leave blank if not applicable)*

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**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** *(if the indications are not for all designated States)*


**Europe**

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January 12, 1998

Accession Number

209578

**C. ADDITIONAL INDICATIONS** (leave blank if not applicable)

This information is continued on an additional sheet ☐

**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (if the indications are not for all designated States)


Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

Continued on additional sheets

**E. SEPARATE FURNISHING OF INDICATIONS** (leave blank if not applicable)

The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

**B. IDENTIFICATION OF DEPOSIT**

Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution (including postal code and country)  
10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

July 16, 1998

Accession Number

203067

**C. ADDITIONAL INDICATIONS** (leave blank if not applicable)

This information is continued on an additional sheet ☐

**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (if the indications are not for all designated States)

Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

Continued on additional sheets

**E. SEPARATE FURNISHING OF INDICATIONS** (leave blank if not applicable)

The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

**B. IDENTIFICATION OF DEPOSIT**

Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution (including postal code and country)

10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

July 16, 1998

Accession Number

203068

**C. ADDITIONAL INDICATIONS** (leave blank if not applicable)

This information is continued on an additional sheet ☐

**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (if the indications are not for all designated States)

Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

Continued on additional sheets

**E. SEPARATE FURNISHING OF INDICATIONS** (leave blank if not applicable)

The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

**A.** The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

**B. IDENTIFICATION OF DEPOSIT**

Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution (including postal code and country)

10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

February 1, 1999

Accession Number

203609

**C. ADDITIONAL INDICATIONS** (leave blank if not applicable)

This information is continued on an additional sheet ☐

**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (if the indications are not for all designated States)


Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

Continued on additional sheets

**E. SEPARATE FURNISHING OF INDICATIONS** (leave blank if not applicable)

The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

**A.** The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

**B. IDENTIFICATION OF DEPOSIT**

Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*  
10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

February 1, 1999

Accession Number

203610

**C. ADDITIONAL INDICATIONS** *(leave blank if not applicable)*

This information is continued on an additional sheet ☐

**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** *(if the indications are not for all designated States)*


**Europe**

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

Continued on additional sheets

**E. SEPARATE FURNISHING OF INDICATIONS** *(leave blank if not applicable)*

The indications listed below will be submitted to the international Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

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Authorized officer 			Authorized officer		

**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

**B. IDENTIFICATION OF DEPOSIT**

Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution (including postal code and country)  
10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

November 17, 1998

Accession Number

203485

**C. ADDITIONAL INDICATIONS** (leave blank if not applicable)

This information is continued on an additional sheet ☐

**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (if the indications are not for all designated States)


Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

Continued on additional sheets

**E. SEPARATE FURNISHING OF INDICATIONS** (leave blank if not applicable)

The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

**A.** The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

**B. IDENTIFICATION OF DEPOSIT**

Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution (including postal code and country)  
10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

June 18, 1999

Accession Number

PTA-252

**C. ADDITIONAL INDICATIONS** (leave blank if not applicable)

This information is continued on an additional sheet ☐

**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (if the indications are not for all designated States)

Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

Continued on additional sheets

**E. SEPARATE FURNISHING OF INDICATIONS** (leave blank if not applicable)

The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")


For receiving Office use only

For International Bureau use only

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

**B. IDENTIFICATION OF DEPOSIT**

Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution (including postal code and country)  
10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

June 18, 1999

Accession Number

PTA-253

**C. ADDITIONAL INDICATIONS** (leave blank if not applicable)

This information is continued on an additional sheet ☐

**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (if the indications are not for all designated States)


Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

Continued on additional sheets

**E. SEPARATE FURNISHING OF INDICATIONS** (leave blank if not applicable)

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

**A.** The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

**B. IDENTIFICATION OF DEPOSIT**

Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*  
10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

December 22, 1999

Accession Number

PTA-1081

**C. ADDITIONAL INDICATIONS** *(leave blank if not applicable)*

This information is continued on an additional sheet ☐

**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** *(if the indications are not for all designated States)*


**Europe**

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

Continued on additional sheets

**E. SEPARATE FURNISHING OF INDICATIONS** *(leave blank if not applicable)*

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at page 16, paragraph [033].

**B. IDENTIFICATION OF DEPOSIT**

Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution (including postal code and country)

10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

October 5, 2000

Accession Number

PTA-2574

**C. ADDITIONAL INDICATIONS** (leave blank if not applicable)

This information is continued on an additional sheet ☐

**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (if the indications are not for all designated States)


Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

Continued on additional sheets

**E. SEPARATE FURNISHING OF INDICATIONS** (leave blank if not applicable)

The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")

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Authorized officer				Authorized officer	

**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at page 16, paragraph [033].

**B. IDENTIFICATION OF DEPOSIT**

Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution (including postal code and country)  
10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

October 5, 2000

Accession Number

PTA-2575

**C. ADDITIONAL INDICATIONS** (leave blank if not applicable)

This information is continued on an additional sheet ☐

**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (if the indications are not for all designated States)


**Europe**

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

Continued on additional sheets

**E. SEPARATE FURNISHING OF INDICATIONS** (leave blank if not applicable)

The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at page 16, paragraph [033].

**B. IDENTIFICATION OF DEPOSIT**

Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*  
10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

January 5, 2001

Accession Number

(HGS reference code TS-1)

**C. ADDITIONAL INDICATIONS** *(leave blank if not applicable)*

This information is continued on an additional sheet ☐

**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** *(if the indications are not for all designated States)*


**Europe**

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

*Continued on additional sheets*

**E. SEPARATE FURNISHING OF INDICATIONS** *(leave blank if not applicable)*

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

**A.** The indications made below relate to the deposited microorganism or other biological material referred to in the description at page 16, paragraph [033].

**B. IDENTIFICATION OF DEPOSIT**

Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution (including postal code and country)

10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

January 5, 2001

Accession Number

(HGS reference code TS-2)

**C. ADDITIONAL INDICATIONS** (leave blank if not applicable)

This information is continued on an additional sheet ☐

**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (if the indications are not for all designated States)


**Europe**

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

Continued on additional sheets

**E. SEPARATE FURNISHING OF INDICATIONS** (leave blank if not applicable)

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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

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**B. IDENTIFICATION OF DEPOSIT**

Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution (*including postal code and country*)

10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

January 5, 2001

Accession Number

(HGS reference code AC-1)

**C. ADDITIONAL INDICATIONS** (*leave blank if not applicable*)

This information is continued on an additional sheet ☐

**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (*if the indications are not for all designated States*)


**Europe**

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

Continued on additional sheets

**E. SEPARATE FURNISHING OF INDICATIONS** (*leave blank if not applicable*)

The indications listed below will be submitted to the international Bureau later (*specify the general nature of the indications e.g., "Accession Number of Deposit"*)

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Authorized officer 			Authorized officer		

**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM  
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

**A.** The indications made below relate to the deposited microorganism or other biological material referred to in the description at page 16, paragraph [033].

**B. IDENTIFICATION OF DEPOSIT**

Further deposits are identified on an additional sheet ☐

Name of depositary institution: American Type Culture Collection

Address of depositary institution (including postal code and country)  
10801 University Boulevard  
Manassas, Virginia 20110-2209  
United States of America

Date of deposit

January 5, 2001

Accession Number

(HGS reference code AC-2)

**C. ADDITIONAL INDICATIONS** (leave blank if not applicable)

This information is continued on an additional sheet ☐

**D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE** (if the indications are not for all designated States)

Europe

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

Continued on additional sheets

**E. SEPARATE FURNISHING OF INDICATIONS** (leave blank if not applicable)

The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")

For receiving Office use only

For International Bureau use only

☒ This sheet was received with the international application

☐ This sheet was received by the International Bureau on:

Authorized officer

Authorized officer

**ATCC Deposit No.:** 209059, 209060, 209061, 209062, 209063, 209064, 209065, 209066, 209067, 209068, 209069, 209579, 209578, 203067, 203068, 203609, 203610, 203485, PTA-252, PTA-253, PTA-1081, PTA-2574, PTA-2575, TS-1, TS-2, AC-1, AC-2

## **CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

## **NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

## **AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

## **FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**ATCC Deposit No.:** 209059, 209060, 209061, 209062, 209063, 209064, 209065, 209066, 209067, 209068, 209069, 209579, 209578, 203067, 203068, 203609, 203610, 203485, PTA-252, PTA-253, PTA-1081, PTA-2574, PTA-2575, TS-1, TS-2, AC-1, AC-2

## **UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

## **DENMARK**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## **SWEDEN**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by an applicant in the individual case.

## **NETHERLANDS**

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

*What Is Claimed Is:*

1. An isolated nucleic acid molecule comprising a polynucleotide having a nucleotide sequence at least 95% identical to a sequence selected from the group consisting of:
  - (a) a polynucleotide fragment of SEQ ID NO:X or a polynucleotide fragment of the cDNA sequence contained in Clone ID NO:Z, which is hybridizable to SEQ ID NO:X;
  - (b) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA sequence contained in cDNA Clone ID NO:Z, which is hybridizable to SEQ ID NO:X;
  - (c) a polynucleotide encoding a polypeptide fragment of a polypeptide encoded by SEQ ID NO:X or a polypeptide fragment encoded by the cDNA sequence contained in cDNA Clone ID NO:Z, which is hybridizable to SEQ ID NO:X;
  - (d) a polynucleotide encoding a polypeptide domain of SEQ ID NO:Y or a polypeptide domain encoded by the cDNA sequence contained in cDNA Clone ID NO:Z, which is hybridizable to SEQ ID NO:X;
  - (e) a polynucleotide encoding a polypeptide epitope of SEQ ID NO:Y or a polypeptide epitope encoded by the cDNA sequence contained in cDNA Clone ID NO:Z, which is hybridizable to SEQ ID NO:X;
  - (f) a polynucleotide encoding a polypeptide of SEQ ID NO:Y or the cDNA sequence contained in cDNA Clone ID NO:Z, which is hybridizable to SEQ ID NO:X, having biological activity;
  - (g) a polynucleotide which is a variant of SEQ ID NO:X;
  - (h) a polynucleotide which is an allelic variant of SEQ ID NO:X;
  - (i) a polynucleotide which encodes a species homologue of the SEQ ID NO:Y;
  - (j) a polynucleotide capable of hybridizing under stringent conditions to any one of the polynucleotides specified in (a)-(i), wherein said polynucleotide does not hybridize under stringent conditions to a nucleic acid molecule having a nucleotide sequence of only A residues or of only T residues.
2. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding a protein.

3. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding the sequence identified as SEQ ID NO:Y or the polypeptide encoded by the cDNA sequence contained in cDNA Clone ID NO:Z, which is hybridizable to SEQ ID NO:X.

4. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises the entire nucleotide sequence of SEQ ID NO:X or the cDNA sequence contained in cDNA Clone ID NO:Z, which is hybridizable to SEQ ID NO:X.

5. The isolated nucleic acid molecule of claim 2, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

6. The isolated nucleic acid molecule of claim 3, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

7. A recombinant vector comprising the isolated nucleic acid molecule of claim 1.

8. A method of making a recombinant host cell comprising the isolated nucleic acid molecule of claim 1.

9. A recombinant host cell produced by the method of claim 8.

10. The recombinant host cell of claim 9 comprising vector sequences.

11. An isolated polypeptide comprising an amino acid sequence at least 90% identical to a sequence selected from the group consisting of:

(a) a polypeptide fragment of SEQ ID NO:Y or the encoded sequence contained in cDNA Clone ID NO:Z;

(b) a polypeptide fragment of SEQ ID NO:Y or the encoded sequence contained in cDNA Clone ID NO:Z, having biological activity;

- (c) a polypeptide domain of SEQ ID NO:Y or the encoded sequence contained in cDNA Clone ID NO:Z;
- (d) a polypeptide epitope of SEQ ID NO:Y or the encoded sequence contained in cDNA Clone ID NO:Z;
- (e) a full length protein of SEQ ID NO:Y or the encoded sequence contained in cDNA Clone ID NO:Z;
- (f) a variant of SEQ ID NO:Y;
- (g) an allelic variant of SEQ ID NO:Y; or
- (h) a species homologue of the SEQ ID NO:Y.

12. The isolated polypeptide of claim 11, wherein the full length protein comprises sequential amino acid deletions from either the C-terminus or the N-terminus.

13. An isolated antibody that binds specifically to the isolated polypeptide of claim 11.

14. A recombinant host cell that expresses the isolated polypeptide of claim 11.

15. A method of making an isolated polypeptide comprising:

- (a) culturing the recombinant host cell of claim 14 under conditions such that said polypeptide is expressed; and
- (b) recovering said polypeptide.

16. The polypeptide produced by claim 15.

17. A method for preventing, treating, or ameliorating a medical condition, comprising administering to a mammalian subject a therapeutically effective amount of the polynucleotide of claim 1.

18. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

- (a) determining the presence or absence of a mutation in the polynucleotide of claim 1; and



(b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or absence of said mutation.

19. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

(a) determining the presence or amount of expression of the polypeptide of claim 11 in a biological sample; and

(b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or amount of expression of the polypeptide.

20. A method for identifying a binding partner to the polypeptide of claim 11 comprising:

(a) contacting the polypeptide of claim 11 with a binding partner; and

(b) determining whether the binding partner effects an activity of the polypeptide.

21. The gene corresponding to the cDNA sequence of SEQ ID NO:Y.

22. A method of identifying an activity in a biological assay, wherein the method comprises:

(a) expressing SEQ ID NO:X in a cell;

(b) isolating the supernatant;

(c) detecting an activity in a biological assay; and

(d) identifying the protein in the supernatant having the activity.

23. The product produced by the method of claim 20.

24. A method for preventing, treating, or ameliorating a medical condition, comprising administering to a mammalian subject a therapeutically effective amount of the polypeptide of claim 11.